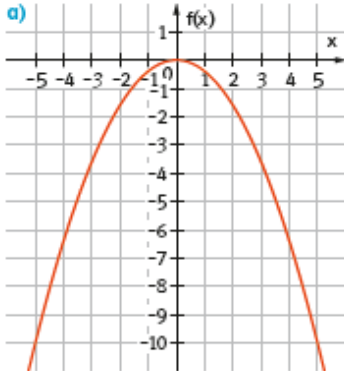
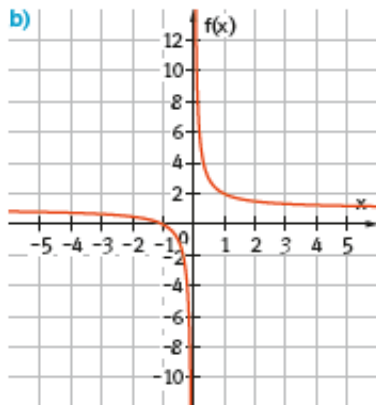
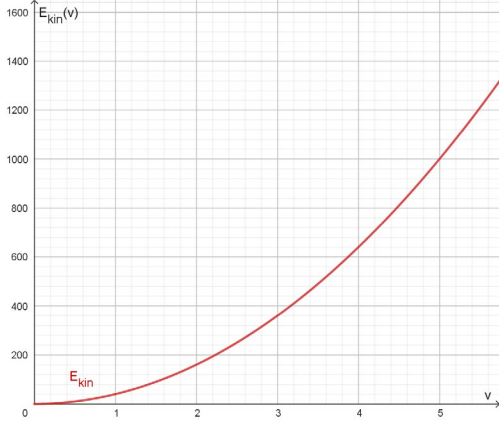


## Kapitel 28

| Nr.  | Lösung                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Anmerkung |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------|----|------|----|------|----|-----|----|------|------|----|------|------|-----|----|-----|------|---|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---|-----|---|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 825  | Der Graph der Funktion f könnte der Graph einer gebrochen rationalen Funktion sein, da der Graph eine Hyperbel ist. g könnte der Graph einer quadratischen Funktion sein, da der Graph eine Parabel ist.                                                                                                                                                                                                                                                                                                                                                                                                  |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 826a | <div>a)</div>  <table><thead><tr><th>x</th><th>f(x)</th></tr></thead><tbody><tr><td>-4</td><td>-8</td></tr><tr><td>-3</td><td>-4,5</td></tr><tr><td>-2</td><td>-2</td></tr><tr><td>-1</td><td>-0,5</td></tr><tr><td>0</td><td>0</td></tr><tr><td>1</td><td>-0,5</td></tr><tr><td>2</td><td>-2</td></tr><tr><td>3</td><td>-4,5</td></tr><tr><td>4</td><td>-8</td></tr></tbody></table>                                                                                                        | x         | f(x) | -4 | -8   | -3 | -4,5 | -2 | -2  | -1 | -0,5 | 0    | 0  | 1    | -0,5 | 2   | -2 | 3   | -4,5 | 4 | -8 | <p>Es werden die einzelnen Werte für x eingesetzt und die Funktionswerte berechnet. Anschließend kann man die Punkte in das Koordinatensystem einzeichnen und verbinden.</p> $f(-4) = -0,5 \cdot (-4)^2 = -8$ $f(-3) = -0,5 \cdot (-3)^2 = -4,5$ $f(-2) = -0,5 \cdot (-2)^2 = -2$ $f(-1) = -0,5 \cdot (-1)^2 = -0,5$ $f(0) = -0,5 \cdot (0)^2 = 0$ $f(1) = -0,5 \cdot 1^2 = -0,5$ $f(2) = -0,5 \cdot 2^2 = -2$ $f(3) = -0,5 \cdot 3^2 = -4,5$ $f(4) = -0,5 \cdot 4^2 = -8$ |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| x    | f(x)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -4   | -8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -3   | -4,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -2   | -2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -1   | -0,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0    | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1    | -0,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2    | -2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3    | -4,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 4    | -8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 826b | <div>b)</div>  <table><thead><tr><th>x</th><th>f(x)</th></tr></thead><tbody><tr><td>-4</td><td>0,75</td></tr><tr><td>-3</td><td>0,67</td></tr><tr><td>-2</td><td>0,5</td></tr><tr><td>-1</td><td>0</td></tr><tr><td>-0,5</td><td>-1</td></tr><tr><td>-0,1</td><td>-9</td></tr><tr><td>0,1</td><td>11</td></tr><tr><td>0,5</td><td>3</td></tr><tr><td>1</td><td>2</td></tr><tr><td>2</td><td>1,5</td></tr><tr><td>3</td><td>1,3</td></tr><tr><td>4</td><td>1,25</td></tr></tbody></table> | x         | f(x) | -4 | 0,75 | -3 | 0,67 | -2 | 0,5 | -1 | 0    | -0,5 | -1 | -0,1 | -9   | 0,1 | 11 | 0,5 | 3    | 1 | 2  | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1,5 | 3 | 1,3 | 4 | 1,25 | <p>Es werden die einzelnen Werte für x eingesetzt und die Funktionswerte berechnet. Den Wert 0 darf man für x nicht einsetzen.</p> <p>Anschließend kann man die Punkte in das Koordinatensystem einzeichnen und verbinden.</p> $f(-4) = \frac{1}{-4} + 1 = 0,75$ $f(-3) = \frac{1}{-3} + 1 = 0,67$ $f(-2) = \frac{1}{-2} + 1 = 0,5$ $f(-1) = \frac{1}{-1} + 1 = 0$ $f(-0,5) = \frac{1}{-0,5} + 1 = -1$ $f(-0,1) = \frac{1}{-0,1} + 1 = -9$ $f(0,1) = \frac{1}{0,1} + 1 = 11$ $f(0,5) = \frac{1}{0,5} + 1 = 3$ $f(1) = \frac{1}{1} + 1 = 2$ $f(2) = \frac{1}{2} + 1 = 1,5$ $f(3) = \frac{1}{3} + 1 = 1,3$ |
| x    | f(x)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -4   | 0,75                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -3   | 0,67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -2   | 0,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -1   | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -0,5 | -1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| -0,1 | -9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0,1  | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 0,5  | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 1    | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 2    | 1,5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 3    | 1,3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 4    | 1,25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |      |    |      |    |      |    |     |    |      |      |    |      |      |     |    |     |      |   |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |   |     |   |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|     |                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     |                                                                                   | $f(4) = \frac{1}{4} + 1 = 1,25$ $f(-0,1) = \frac{1}{-0,1} + 1 = -9$                                                                                                                                                                                                                                                                                                                                                    |
| 827 |  | <p>Man setzt für m den richtigen Wert (80) ein und berechnet dann mit Hilfe einer Wertetabelle die passenden Punkte. Auf der y-Achse ist eine Skalierung in 100er oder 200er Schritten zu empfehlen.</p> $E_{kin}(v) = \frac{80v^2}{2} = 40v^2$ $E_{kin}(0) = 40 \cdot 0^2 = 0$ $E_{kin}(1) = 40 \cdot 1^2 = 40$ $E_{kin}(2) = 40 \cdot 2^2 = 160$ $E_{kin}(3) = 40 \cdot 3^2 = 360$ $E_{kin}(4) = 40 \cdot 4^2 = 560$ |