

LÖSUNG ZU 593:

c)

$$f(x) = \frac{-3x^2+1}{4-3x} \quad / \text{Quotientenregel anwenden}$$

$$f(x) = \frac{g(x)}{h(x)} \quad f'(x) = \frac{g'(x) \cdot h(x) - g(x) \cdot h'(x)}{(h(x))^2}$$

$$g(x) = -3x^2 + 1 \quad g'(x) = -6x \quad h(x) = 4 - 3x \quad h'(x) = -3$$

$$f'(x) = \frac{-6x \cdot (4 - 3x) - (-3x^2 + 1) \cdot (-3)}{(4 - 3x)^2} = \frac{-24x + 18x^2 - (9x^2 - 3)}{(4 - 3x)^2} = \frac{-24x + 18x^2 - 9x^2 + 3}{16 - 24x + 9x^2} = \frac{9x^2 - 24x + 3}{16 - 24x + 9x^2}$$

k einsetzen:

$$-12 = \frac{9x^2 - 24x + 3}{16 - 24x + 9x^2} \quad / \cdot (16 - 24x + 9x^2)$$

$$-192 + 288x - 108x^2 = 9x^2 - 24x + 3 \quad / + 24x - 9x^2 - 3$$

$$-195 + 312x - 117x^2 = 0 \quad / \text{ordnen}$$

$$-117x^2 + 312x - 195 = 0$$

$$x_{1,2} = \frac{-312 \pm \sqrt{97344 - 4 \cdot (-117) \cdot (-195)}}{-234}$$

$$x_{1,2} = \frac{-312 \pm \sqrt{97344 - 91260}}{-234}$$

$$x_{1,2} = \frac{-312 \pm \sqrt{6084}}{-234} = \frac{-312 \pm 78}{-234}$$

$$x_1 = 1 \quad x_2 = \frac{5}{3}$$

in f(x) einsetzen

$$x_1 = 1 \quad f(1) = -2 \quad P = (1 \mid -2)$$

$$x_2 = \frac{5}{3} \quad f\left(\frac{5}{3}\right) = \frac{22}{3} \quad P = \left(\frac{5}{3} \mid \frac{22}{3}\right)$$

