LÖSUNG ZU 27f:

$x^4 – 8x^3 + 24x^2 - 32x + 16 = 0$

konstantes Glied: 16

$T_{16} = \{\pm 1; \pm 2; \pm 4; \pm 8; \pm 16\}$

z.B.:

$x = 1 \quad 1 – 8 + 24 – 32 + 16 = 0$
$1 = 0$ f.A.

$x = -1 \quad 1 + 8 + 24 + 32 + 16 = 0$
$81 = 0$ f.A.

$x = 2 \quad 16 – 64 + 96 – 64 + 16 = 0$
$0 = 0$ w.A.

Linearfaktor: $(x – 2)$

Polynomdivision:

$(x^4 – 8x^3 + 24x^2 - 32x + 16) : (x – 2) = x^3 - 6x^2 + 12x – 8$
$\underline{- x^4 + 2x^3}$
$0 – 6x^3 + 24x^2$
$\underline{+ 6x^3 - 12x^2}$
$0 \quad 12x^2 - 32x$
$\underline{- 12x^2 + 24x}$
$0 \quad - 8x + 16$
$\underline{8x – 16}$
0

$x^3 - 6x^2 + 12x – 8 = 0$

konstantes Glied: - 8

$T_{-8} = \{\pm 1; \pm 2; \pm 4; \pm 8\}$

z.B.:

$x = 1 \quad 1 – 6 + 12 – 8 = 0$
$- 3 = 0$ f.A.

$x = -1 \quad - 1 - 6 - 12 - 8 = 0$
$- 27 = 0$ f.A.

$x = 2 \quad 8 – 24 + 24 - 8 = 0$
$0 = 0$ w.A.

Linearfaktor: $(x – 2)$

Polynomdivision:

$(x^3 - 6x^2 + 12x - 8) : (x - 2) = x^2 - 4x + 4$

$\underline{- x^3 + 2x^2}$

$0 - 4x^2 + 12x$

$\underline{+ 4x^2 - 8x}$

$0 \quad 4x - 8$

$\underline{- 4x + 8}$

0

$x^2 - 4x + 4 = 0$ /Anwendung der kleinen Lösungsformel

$x_{1,2} = 2 \pm \sqrt{4 - 4}$

$x_{1,2} = 2$

$L = \{2\}$