

Lösungen Linearfaktoren

Aufgabe

a) $f(x) = a(x - x_1)$

$$f(x) = 2(x - 3)$$

$$f(x) = 2x - 6$$

b) $f(x) = a(x - x_1)(x - x_2)$

$$f(x) = 0,5(x + 2)(x - 5)$$

$$f(x) = 0,5(x^2 - 5x + 2x - 10)$$

$$f(x) = 0,5(x^2 - 3x - 10)$$

$$f(x) = 0,5x^2 - 1,5x - 5$$

c) $f(x) = a(x - x_1)(x - x_2)(x - x_3)$

$$f(x) = \frac{2}{3}(x - 3)(x - 2)(x + 1)$$

$$f(x) = \frac{2}{3}(x - 3)(x^2 + x - 2x - 2)$$

$$f(x) = \frac{2}{3}(x - 3)(x^2 - x - 2)$$

$$f(x) = \frac{2}{3}(x^3 - x^2 - 2x - 3x^2 + 3x + 6)$$

$$f(x) = \frac{2}{3}(x^3 - 4x^2 + x + 6)$$

$$f(x) = \frac{2}{3}x^3 - \frac{8}{3}x^2 + \frac{2}{3}x + 4$$

d) $f(x) = a(x - x_1)(x - x_2)(x - x_3)$

$$f(x) = -(x - 4)(x - 4)(x + 1) \quad \text{oder} \quad f(x) = -(x - 4)^2(x + 1)$$

$$f(x) = -(x^2 - 8x + 16)(x + 1)$$

$$f(x) = -(x^3 - 8x^2 + 16x + x^2 - 8x + 16)$$

$$f(x) = -(x^3 - 7x^2 + 8x + 16)$$

$$f(x) = -x^3 + 7x^2 - 8x - 16$$

e) $f(x) = a(x - x_1)(x - x_2)(x - x_3)$

$$f(x) = -0,25(x - 0)(x - 2)(x - 8) \quad \text{oder} \quad f(x) = -0,25x(x - 2)(x - 8)$$

$$f(x) = -0,25x(x^2 - 8x - 2x + 16)$$

$$f(x) = -0,25x(x^2 - 10x + 16)$$

$$f(x) = -0,25x^3 + 2,5x^2 - 4x$$

f) $f(x) = a(x - x_1)(x - x_2)(x - x_3)$

$$f(x) = 3(x - 0)(x - 0)(x + 2) \quad \text{oder} \quad f(x) = 3x^2(x + 2)$$

$$f(x) = 3x^3 + 6x^2$$