# Linearfaktoren

Bestimme die Funktionsvorschrift in der Produktdarstellung und multipliziere dann aus.

| | | Lösung |
|---|---|---|
| 1) | $x_1$ : + 4 $x_2$ : + 2 $x_3$ : - 1 | $f(x) = (x + 4) \cdot (x + 2) \cdot (x - 1)$<br>$f(x) = (x^2 + 2x + 4x + 8) \cdot (x - 1)$<br>$f(x) = (x^3 - 1x^2 + 2x^2 - 2x + 4x^2 - 4x + 8x - 8)$<br>$f(x) = x^3 + 5x^2 + 2x - 8$ |
| 2) | $x_1$ : - 2 $x_2$ : + 4 $x_3$ : + 3 | $f(x) = (x - 2) \cdot (x + 4) \cdot (x + 3)$<br>$f(x) = (x^2 + 4x - 2x - 8) \cdot (x + 3)$<br>$f(x) = (x^3 + 3x^2 + 4x^2 + 12x - 2x^2 - 6x - 8x - 24)$<br>$f(x) = x^3 + 5x^2 - 2x - 24$ |
| 3) | $x_1$ : + 5 $x_2$ : - 2 $x_3$ : + 1 | $f(x) = (x + 5) \cdot (x - 2) \cdot (x + 1)$<br>$f(x) = (x^2 - 2x + 5x - 10) \cdot (x + 1)$<br>$f(x) = (x^3 + 1x^2 - 2x^2 - 2x + 5x^2 + 5x - 10x - 10)$<br>$f(x) = x^3 + 4x^2 - 7x - 10$ |
| 4) | $x_1$ : - 6 $x_2$ : - 2 $x_3$ : - 5 | $f(x) = (x - 6) \cdot (x - 2) \cdot (x - 5)$<br>$f(x) = (x^2 - 2x - 6x + 12) \cdot (x - 5)$<br>$f(x) = (x^3 - 5x^2 - 2x^2 + 10x - 6x^2 + 30x + 12x - 60)$<br>$f(x) = x^3 - 13x^2 + 52x - 60$ |
| 5) | $x_1$ : - 3 $x_2$ : + 1 $x_3$ : + 6 | $f(x) = (x - 3) \cdot (x + 1) \cdot (x + 6)$<br>$f(x) = (x^2 + 1x - 3x - 3) \cdot (x + 6)$<br>$f(x) = (x^3 + 6x^2 + 1x^2 + 6x - 3x^2 - 18x - 3x - 18)$<br>$f(x) = x^3 + 4x^2 - 15x - 18$ |
| 6) | $x_1$ : - 8 $x_2$ : - 5 $x_3$ : - 2 | $f(x) = (x - 8) \cdot (x - 5) \cdot (x - 2)$<br>$f(x) = (x^2 - 5x - 8x + 40) \cdot (x - 2)$<br>$f(x) = (x^3 - 2x^2 - 5x^2 + 10x - 8x^2 + 16x + 40x - 80)$<br>$f(x) = x^3 - 15x^2 + 66x - 80$ |
| 7) | $x_1$ : + 4 $x_2$ : - 10 $x_3$ : - 1 | $f(x) = (x + 4) \cdot (x - 10) \cdot (x - 1)$<br>$f(x) = (x^2 - 10x + 4x - 40) \cdot (x - 1)$<br>$f(x) = (x^3 - 1x^2 - 10x^2 + 10x + 4x^2 - 4x - 40x + 40)$<br>$f(x) = x^3 - 7x^2 - 34x + 40$ |
| 8) | $x_1$ : + 8 $x_2$ : + 7 $x_3$ : - 2 | $f(x) = (x + 8) \cdot (x + 7) \cdot (x - 2)$<br>$f(x) = (x^2 + 7x + 8x + 56) \cdot (x - 2)$<br>$f(x) = (x^3 - 2x^2 + 7x^2 - 14x + 8x^2 - 16x + 56x - 112)$<br>$f(x) = x^3 + 13x^2 + 26x - 112$ |