

Polynomi

3.asteen polynomifunktio

1.1

a) $f(x) = -x^3 + 2x^2 + 3x + 4$

nimi

muuttuja

kerroin (-1)

↓

3 ← asteluku

-x

termi

muuttuja

lauseke

↑
vakio-
termi

muuttujan arvo

↓

$$f(2) = -2^3 + 2 \cdot 2^2 + 3 \cdot 2 + 4$$

$$= -8 + 8 + 6 + 4 = 10$$

funktion arvo (y)

b) $g(t) = 1 + 4t - 2t^2$

2.asteen
polynomi

$$g(2) = 1 + 4 \cdot 2 - 2 \cdot 2^2 =$$

$$1 + 8 - 8 = 1$$

c) $h(x) = x^2 + ax + 3a$

(a tuntematon
vakio)

$$h(2) = 2^2 + a \cdot 2 + 3a$$

$$= 4 + 2a + 3a = 5a + 4$$

1.2

a) $(4x - 1) + (2x - 5)$

$$= 4x - 1 + 2x - 5$$

$$= 6x - 6$$

b) $(2x^2 - x) - (5x - 4x^2)$

$$= 2x^2 - x - 5x + 4x^2$$

$$x + x = 2x$$

$$= \underline{2x^2} - \underline{x} - \underline{3x} + \underline{4x^2}$$

$$x+x=2x$$

$$x \cdot x = x^2$$

$$= 6x^2 - 6x$$

$$\begin{aligned} \text{c) } 4x \cdot (2x^2 - 3x) &= 4x \cdot 2x^2 + 4x \cdot (-3x) \\ &= 8x^3 - 12x^2 \end{aligned}$$

$$\text{d) } (3x - 1)(4x - 3)$$

$$= 12x^2 - 9x - 4x + 3 = 12x^2 - 13x + 3$$

1.8

$$\begin{aligned} \text{a) } x - x(x+2)(2x+3) \\ &= x + (-x^2 - 2x)(2x+3) \\ &= x + (-2x^3 - 3x^2 - 4x^2 - 6x) \\ &= x - 2x^3 - 7x^2 - 6x \\ &= -2x^3 - 7x^2 - 5x \end{aligned}$$

$$\begin{aligned} (4x)^2 \\ &= 4^2 \cdot x^2 \\ &= 16x^2 \end{aligned}$$

$$\begin{aligned} \text{b) } (4x - 1)^2 \\ &= (4x - 1)(4x - 1) \\ &= 16x^2 - 4x - 4x + 1 \\ &= 16x^2 - 8x + 1 \end{aligned}$$

1.7 1.9