

POLYNOMIT

termit
kerroin
muuttujan

esim $2x^4 - 7x^3 - 2$

termit	kerroin	muuttujan	aste
$2x^4$	2	x^4	4
$-7x^3$	-7	x^3	3
-2	-2	-	0

Termit, jille on sama kerroin, kutsutaan samannimisiksi termeiksi.

esim

1^o monomi $2a^4$

2^o binomi $2a^4 - 3a^5$

3^o trinomi $3y + 4y^5 - 2y^3$
 $= 4y^5 - 2y^3 + 3y$

asteiden 5. astetta

esim 2. asteen polynomi

$P(x) = 3x^2 - 5x + 3$

$Q(x)$

$R(x)$

esim $P(x)$ ja $Q(x) = -7x^2 + 2x - 5$

- a) summa $P(x) + Q(x)$ **huom!**
- b) erotus **huom!**
- c) $Q(1)$ $-m - m$
- d) $P(a)$

Ratk. a)

$$= 3x^2 - 5x + 3 + (-7x^2 + 2x - 5)$$

$$= 3x^2 - 5x + 3 - 7x^2 + 2x - 5$$

$$= -4x^2 - 3x - 2$$

\uparrow 2. ast. \uparrow 1. ast. \uparrow 0. ast.

b)

$$= 3x^2 - 5x + 3 - (-7x^2 + 2x - 5)$$

$$= 3x^2 - 5x + 3 + 7x^2 - 2x + 5$$

$$= 10x^2 - 7x + 8$$

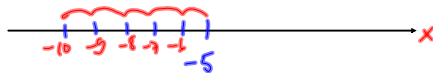
c) $Q(1) = -7 \cdot 1^2 + 2 \cdot 1 - 5$

$$= -7 + 2 - 5$$

$$= -5 - 5$$

$$= -10$$

$1^2 = 1 \cdot 1 = 1$
 $-7 \cdot 1 = -7$

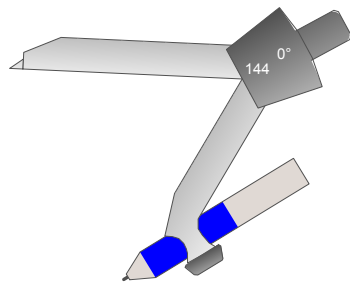
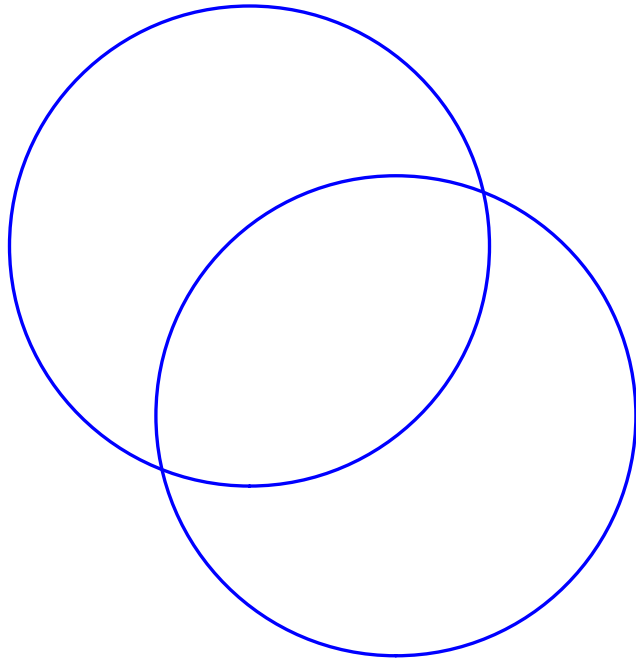


d) $P(a)$

$$P(x) = 3x^2 - 5x + 3$$

$$P(a) = 3a^2 - 5a + 3$$

$$P(5) = 3 \cdot 5^2 - 5 \cdot 5 + 3$$



$$\begin{aligned} \underline{\text{cinn}} &= 2a^3 \cdot 6a^4 \\ &= 2 \cdot 6 \cdot a^3 \cdot a^4 = 12a^{3+4} = 12a^7 \end{aligned}$$

$$\begin{aligned} \underline{\text{cinn}} &= 2(y-5) \\ &= 2 \cdot y + 2 \cdot (-5) \\ &= \underline{2y - 10} \end{aligned}$$

$$\begin{aligned} \underline{\text{cinn}} &= (x+3)(x-2) \\ &= x \cdot x + x \cdot (-2) + 3x + \underbrace{3(-2)} \\ &= x^2 - 2x + 3x - 6 \\ &= \underline{x^2 + x - 6} \end{aligned}$$

$$\begin{aligned} \underline{\text{cos}} \quad \frac{12x^6y^3}{6x^4y^2} &= \frac{\overset{2}{\cancel{12}}}{\underset{1}{\cancel{6}}} \frac{x^6}{x^4} \cdot \frac{y^3}{y^2} \\ &= \underline{\underline{2x^2y}} \end{aligned}$$

$$\begin{aligned} \frac{x^6}{x^4} &= x^{6-4} \\ &= x^2 \end{aligned}$$

$$\frac{y^3}{y^2} = y^{3-2} = y^1 = y$$

$$\begin{aligned} \underline{\text{cos}} \quad &\frac{81a^7 - 27a^4 - 9a}{3a} \\ = &\frac{\overset{27}{\cancel{81}}a^7}{\underset{1}{\cancel{3}a}} - \frac{\overset{3a}{\cancel{27}}a^4}{\underset{1}{\cancel{3}a}} - \frac{\overset{3}{\cancel{9}}a}{\underset{1}{\cancel{3}a}} \\ = &\underline{\underline{27a^6 - 9a^3 - 3}} \end{aligned}$$