

$$2.18 \quad (2x+1)(4x-2)(4x^2+1)$$

$$= (8x^2 - 4x + 4x - 2)(4x^2 + 1) = 32x^4 + 8x^2 - 8x^2 - 2 = 32x^4 - 2$$

$$2.24 \quad a) \quad 3+5=8=2 \cdot 4 \quad \%$$

$$9+17=26=2 \cdot 13 \quad \%$$

$$\text{Yleisesti } (2m+1) + (2k+1) = 2m+2k+2 = 2(m+k+1) \quad \%$$

$\in \mathbb{Z}$
on jollain 2:lle eli parillinen

$$b) \quad 5 \cdot 7 = 35 \quad \%$$

$$9 \cdot 11 = 99 \quad \%$$

$$\text{Yleisesti } (2m+1)(2k+1) = 4mk + 2m + 2k + 1$$

$$= 2(2mk + m + k) + 1 \quad \% \text{ pariton}$$

$\in \mathbb{Z}$

3. Summan neliö ja erotuksen neliö

$$(a+b)^2 = (a+b)(a+b) = a^2 + ab + ba + b^2 = a^2 + 2ab + b^2$$

$$(a-b)^2 = (a-b)(a-b) = a^2 - ab - ba + b^2 = a^2 - 2ab + b^2$$

$$\Rightarrow \begin{cases} (a+b)^2 = a^2 + 2ab + b^2 \\ (a-b)^2 = a^2 - 2ab + b^2 \end{cases} \quad \begin{array}{l} \text{BINOMIN NELIÖ} \\ \text{(MUISTIKAAVAT!)} \end{array}$$

Esim. a) $(2x+3)^2 = (2x)^2 + 2 \cdot 2x \cdot 3 + 3^2 = 4x^2 + 12x + 9$

b) $(5-3y^2)^2 = 5^2 - 2 \cdot 5 \cdot 3y^2 + (3y^2)^2 = 25 - 30y^2 + 9$

$$\uparrow (5-3y^2)^2 = (5+(-3y^2))^2 = 5^2 + 2 \cdot 5 \cdot (-3y^2) + (-3y^2)^2 = 25 - 30y^2 + 9y^4$$

c) $(-2+4a)^2 = (-2)^2 + 2 \cdot (-2) \cdot 4a + (4a)^2 = 4 - 16a + 16a^2$

$$\uparrow (-2+4a)^2 = (4a-2)^2 = (4a)^2 - 2 \cdot 4a \cdot 2 + 2^2 = 16a^2 - 16a + 4$$

d) $(-a-6x)^2 = (-a)^2 - 2 \cdot (-a) \cdot 6x + (6x)^2 = a^2 + 12ax + 36x^2$

$$\uparrow (-a-6x)^2 = (-a+(-6x))^2 = (-a)^2 + 2 \cdot (-a) \cdot (-6x) + (-6x)^2$$

$$= a^2 + 12ax + 36x^2$$

$$\uparrow (-a-6x)^2 = (-(a+6x))^2 = (a+6x)^2 = a^2 + 2 \cdot a \cdot 6x + (6x)^2 = a^2 + 12ax + 36x^2$$

3.4 a) $(x^2+1)^2 = (x^2)^2 + 2 \cdot x^2 \cdot 1 + 1^2 = x^4 + 2x^2 + 1$

b) $(x^3-4)^2 = (x^3)^2 - 2 \cdot x^3 \cdot 4 + 4^2 = x^6 - 8x^3 + 16$

c) $(x^4+6)^2 = (x^4)^2 + 2 \cdot x^4 \cdot 6 + 6^2 = x^8 + 12x^4 + 36$