

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

$$\uparrow \text{TAI: } (-2+4a)^2 = (4a-2)^2 = (4a)^2 - 2 \cdot 4a \cdot 2 + 2^2 = 16a^2 - 16a + 4 \quad \downarrow$$

$$d) \underbrace{(-a)}_a \underbrace{(-6x)}_b = (-a)^2 - 2 \cdot (-a) \cdot 6x + (6x)^2 = a^2 + 12ax + 36x^2$$

$$\uparrow \text{TAI: } (-a-6x)^2 = (-(a+6x))^2 = (a+6x)^2 \\ = a^2 + 2 \cdot a \cdot 6x + (6x)^2 = a^2 + 12ax + 36x^2 \quad \downarrow$$

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

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

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

$$3.6 \quad a) (-4x+7)^2 = (7-4x)^2 = 7^2 - 2 \cdot 7 \cdot 4x + (4x)^2 = 49 - 56x + 16x^2$$

$$\uparrow \text{TAI: } (-4x+7)^2 = (-4x)^2 + 2 \cdot (-4x) \cdot 7 + 7^2 = 16x^2 - 56x + 49 \quad \downarrow$$

$$b) (-x-1)^2 = (-(x+1))^2 = (x+1)^2 = x^2 + 2 \cdot x \cdot 1 + 1^2 = x^2 + 2x + 1$$

$$c) (-x^2-3)^2 = (-x^2)^2 - 2 \cdot (-x^2) \cdot 3 + 3^2 = x^4 + 6x^2 + 9$$

$$3.11 \quad a) (a+b)^2 = a^2 + b^2$$

$$\text{? } \text{Vastoinn. } (1+1)^2 = 1^2 + 1^2$$

$$\Rightarrow 2^2 = 1 + 1$$

$$\Rightarrow 4 = 2 \quad \downarrow \quad \Rightarrow \text{väite on väärä}$$

4. Summan ja erotuksen tulo

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

$$\Rightarrow \boxed{(a-b)(a+b) = a^2 - b^2}$$

$$\text{Esim. } a) (x-3)(x+3) = x^2 - 3^2 = x^2 - 9$$

$$b) (-ae^2+1)(1+ae^2) = (1-ae^2)(1+ae^2) = 1^2 - (ae^2)^2 \\ = 1 - a^2 \cdot (e^2)^2 = 1 - a^2 e^4$$

$$c) (2x-3)(4x^2+9)(2x+3) = ((2x)^2 - 3^2)(4x^2+9) \\ = (4x^2-9)(4x^2+9) \\ = (2x)^2 - 3^2 \quad \leftarrow \quad = (4x^2)^2 - 9^2 = 16x^4 - 81$$