

$$6.4 \text{ a) } 6x^5 \cdot x \cdot x^8 = 6 \cdot x^{5+1+8} = 6 \cdot x^{14} = 6x^{14}$$

$$b) (8 \cdot x^4)^2 \cdot x^9 = 8^2 \cdot (x^4)^2 \cdot x^9 = 64 \cdot x^8 \cdot x^9 = 64 \cdot x^{8+9} = 64x^{17}$$

$$c) \frac{36 \cdot x^8 \cdot x^2}{4 \cdot x^3 \cdot x^6} = \frac{9x^{10}}{x^9} = \frac{9}{1} \cdot \frac{x^{10}}{x^9} = 9 \cdot x^{10-9} = 9 \cdot x^1 = 9x$$

kaava 3,

kaava 4,

$$6.7 \text{ a) } \frac{25^3 \cdot 4^3}{50^3} \stackrel{\downarrow}{=} \frac{(25 \cdot 4)^3}{50^3} = \frac{100^3}{50^3} \stackrel{\downarrow}{=} \left(\frac{100}{50}\right)^3 = 2^3 = 8$$

kaava 3,

$$b) 5^5 \cdot 2^5 \cdot 10 = \stackrel{\downarrow}{=} (5 \cdot 2)^5 \cdot 10 = 10^5 \cdot 10^1 = 10^6$$

kaava 1,

$$6.11 \text{ a) } 8 \cdot a^3 \cdot 3 \cdot a^7 = (8 \cdot 3) \cdot (a^3 \cdot a^7) \stackrel{\downarrow}{=} 24 \cdot a^{3+7} = 24a^{10}$$

kaava 3,

$$b) (-2 \cdot b)^5 \stackrel{\downarrow}{=} (-2)^5 \cdot b^5 = -32b^5$$

$$c) \left(\frac{-7 \cdot c^4 \cdot c^2}{c^5}\right)^2 \stackrel{\uparrow}{=} \left(\frac{-7 \cdot c^6}{c^5}\right)^2 \stackrel{\uparrow}{=} (-7 \cdot c^{6-5})^2 = (-7 \cdot c)^2$$

kaava 1,

kaava 2,

$$= (-7)^2 \cdot c^2 = 49c^2$$

↑
kaava 3.

6.17

$$6.23 \quad \frac{4^{3m+2} \cdot 2 \cdot 8^{2m-1}}{16^{3m}} = \frac{(2^2)^{3m+2} \cdot 2 \cdot (2^3)^{2m-1}}{(2^4)^{3m}} = \frac{2^{2(3m+2)} \cdot 2^1 \cdot 2^{3(2m-1)}}{2^{4 \cdot 3m}} = \frac{2^{6m+4+1+6m-3}}{2^{12m}} = \frac{2^{12m+2}}{2^{12m}} = 2^{(12m+2)-12m} = 2^2 = 4 \text{ vastus}$$

$$\text{Esim. a) } 2^{1001} \cdot 5^{1002} \cdot 0,1^{1000} = 2 \cdot 2^{1000} \cdot 5^2 \cdot 5^{1000} \cdot 0,1^{1000} \\ = 2 \cdot 5^2 \cdot (2 \cdot 5 \cdot 0,1)^{1000} = 2 \cdot 25 \cdot 1^{1000} = 50 \cdot 1 = \underline{50}$$

$$b) 8^{2002} \cdot 0,5^{6000} = (2^3)^{2002} \cdot 0,5^{6000} = 2^{6006} \cdot 0,5^{6000} \\ = 2^6 \cdot 2^{6000} \cdot 0,5^{6000} = 64 \cdot (2 \cdot 0,5)^{6000} = 64 \cdot 1^{6000} = 64 \cdot 1 = \underline{64}$$