

Mallikokeen vastaukset

1. $a = \text{alkup. arvo}$

$$1,046 \cdot 0,97 \cdot 1,07a = 1,086a$$

V : kasvu n. 8,6%

2. a) $\frac{2}{3}x^6 = 1 \quad | : \frac{2}{3} \rightarrow x^6 = \frac{3}{2} \rightarrow x = \pm \sqrt[6]{\frac{3}{2}} \approx \pm 1,0699$

b) $3x^5 + 15 = 7 \rightarrow 3x^5 = -8 \quad || : 3 \rightarrow x^5 = -\frac{8}{3}$
 $\rightarrow x = \sqrt[5]{-\frac{8}{3}} \approx -1,2167$

c) $\frac{1,9^y}{5} = 4 \quad | \cdot 5 \rightarrow 1,9^y = 20 \quad | \lg \rightarrow y = \frac{\lg 20}{\lg 1,9} \approx 4,667$



3.

$$5,5 \text{ vrk} = 132 \text{ h}$$

$$a \cdot x^{132} = 0,76a \quad | : a \rightarrow x^{132} = 0,76 \rightarrow$$

↑
vähenee 24% eli
76% jää jäljelle

$$x = \sqrt[132]{0,76} \approx 0,99792$$

$$a \cdot 0,99792^x = 0,5a \quad \swarrow \text{määrä puolittuu puolittumisajassa } x \text{ (h)} \quad | \lg$$

$$x = \frac{\lg 0,5}{\lg 0,99792} \approx 332,9$$

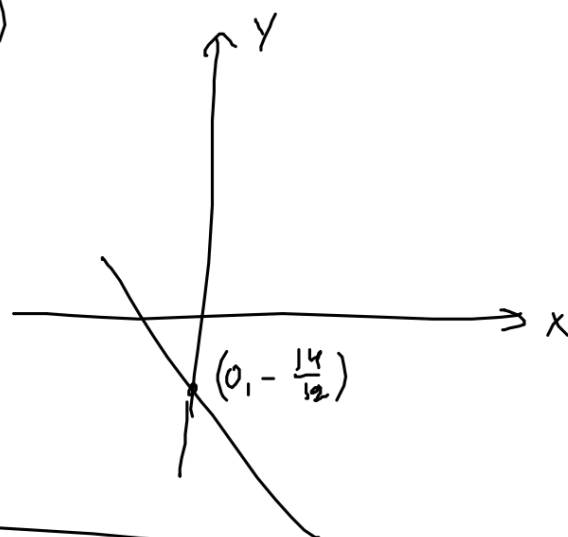
$$V = \text{h. } 333 \text{ h.}$$



$$4. \quad k = \frac{-3 - (-\frac{1}{4})}{2 - (-1)} = -\frac{\frac{11}{4}}{3} = -\frac{11}{12}$$

$$y - (-3) = -\frac{11}{12} (x - 2)$$

$$\rightarrow y = -\frac{11}{12}x - \frac{14}{12}$$



5. 55 kg $\rightarrow$ 5,5 g alk. tunnissa

16 cl alkoholia $\approx 160 \text{ cm}^3$, tästä 12% = $0,12 \cdot 160 \text{ cm}^3 =$

19,2 cm^3 puhdasta

alkoholia, paino

$$= 19,2 \cdot 0,79 \text{ g} = 15,168 \text{ g}$$

$$100 \text{ cl} = 1 \text{ l} = 1000 \text{ cm}^3$$

$$\rightarrow \frac{15,168}{5,5} \approx \underline{\underline{2,8}} \text{ tuntia}$$



6.

X	Y
30	820
35	800

← valitse itse toinen piste

$$b) \rightarrow k = \frac{800-820}{35-30} = -4$$

$$\rightarrow y - 800 = -4(x - 35) \rightarrow y = -4x + 940$$

$$a) \quad x = 45 \quad \rightarrow \quad y = \underline{760}$$

7. 1993 → 2002, 9 vuotta.

$$x \cdot x^9 = 2,5 \rightarrow x = \sqrt[9]{2,5} \approx 1,1072$$

vuotuinen kasvu n. 10,7%

$$1995 \rightarrow 1993: 10,1 \cdot 1,1072^{-2} = 8,24 \quad (\text{miljardia €})$$

$$1995 \rightarrow 2002: 10,1 \cdot 1,1072^7 = 20,61$$