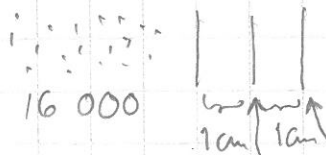


15.12



alusse: 16 000

$$1 \text{ cm} \text{ n j\ddot{a}lleen} : 0,26 \cdot 16000$$

$$2 \text{ cm} \text{ - } \text{---} : 0,26^2 \cdot 16000$$

$$a) 3,5 \text{ cm} \text{ - } \text{---} : 0,26^{3,5} \cdot 16000 \approx 143,39 \approx \underline{140}$$

$$b) x \text{ cm} \text{ - } \text{---} : 0,26^x \cdot 16000 = 0,001 \cdot 16000 \quad | : 16000$$

↑ pidett\ddot{o}e 99,9% → l\ddot{o}gi
j\ddot{o}esse 0,1%

$$\Rightarrow 0,26^x = 0,001$$

$$\Rightarrow x = \log_{0,26} 0,001 \approx 5,128 \approx \underline{5,1 \text{ (cm)}}$$

16. Funktion soeittomien pitej\ddot{o}u\ddot{e}soo

16.2 a) v\ddot{e}kil\ddot{u}sen : y (milj\ddot{e}rdie ihm\ddot{u}t\ddot{e})

$$\text{geogelero} : y = 2,5334 \cdot 1,0189^x$$

$$b) \text{ n. 2020} : y(70) \approx 9,3729 \Rightarrow \text{M. } \underline{9,37 \cdot 10^9}$$

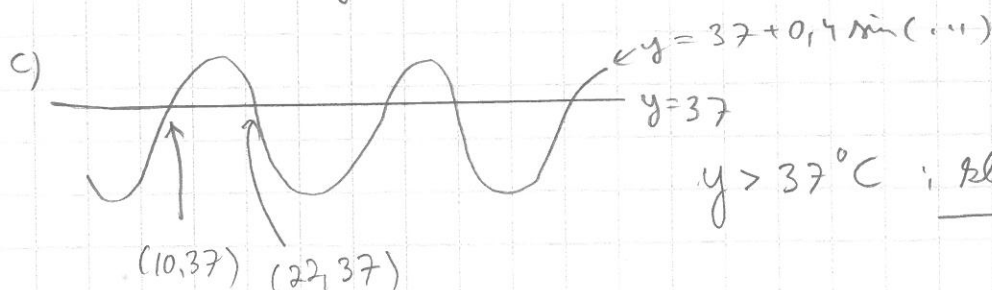
$$c) \text{ V\ddot{a}kil\ddot{u}sen n. 2020 oli } 7,734 \cdot 10^9 \Rightarrow \underline{\text{ei toimi kovin hyvin}}$$

16.7 a) y : J\ddot{a}rven l\ddot{e}mp\ddot{o}t\ddot{i}le ($^{\circ}\text{C}$)

$$\text{geogelero} : y = 37 + 0,4 \sin(0,2618x - 2,618)$$

$$b) \text{ klo 7.30} : y(7,5) \approx 36,7565 \approx \underline{36,8(^{\circ}\text{C})}$$

$$\text{blo 11.00} : y(11) \approx 37,1635 \approx \underline{37,1(^{\circ}\text{C})}$$



$$y > 37^{\circ}\text{C} : \text{blo } 10,00 \dots 22,00$$

16.10 r\ddot{o}y\ddot{a}n\ddot{y}t\ddot{i}e : $y = 868,74 \cdot 0,8803^x$

$$a) 2,0 \text{ cm} \Rightarrow x = 20 \text{ (mm)} : y(20) \approx 67,8852$$

$$\text{alunperin } x = 0 : y(0) = 868,74 \Rightarrow \text{l\ddot{o}gi j\ddot{o}esse} : \frac{67,8852}{868,74} \approx 0,0781 \approx \underline{7,8\%}$$