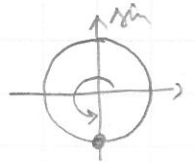


pienin arvo:  $f(1,5) = 9 \sin\left(\frac{\pi}{12} \cdot 1,5 + C\right) - 6 = -15 \quad | +6 \quad | :9$

$$\Rightarrow \sin\left(\frac{\pi}{12} \cdot 1,5 + C\right) = \frac{-15+6}{9} = -1$$



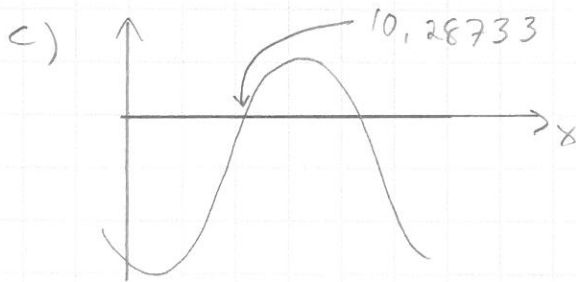
$$\Rightarrow \frac{\pi}{12} \cdot 1,5 + C = \frac{3\pi}{2} + M \cdot 2\pi, \quad M \in \mathbb{Z}$$

Valitaan ensin  $M = 0$  :  $C = \frac{3\pi}{2} - \frac{\pi}{12} \cdot 1,5 = \frac{12\pi}{2} - \frac{\pi}{12} \cdot \frac{3}{2}$

$$= \frac{33}{24} \pi = \frac{11}{8} \pi \approx 4,31969$$

Siten  $f(x) = 9 \sin\left(\frac{\pi}{12}x + \frac{11}{8}\pi\right) - 6 = 9,00 \sin(0,262x + 4,32) - 6,00$

b) klo 12,00 :  $f(12) = 2,3242 \approx 2(^{\circ}\text{C})$



$$0,28733 \text{ h} = 0,28733 \cdot 60 \text{ min} \\ \approx 17,2398 \text{ min}$$

$\Rightarrow$  klo 10,20

8.8  $f(x) = a \sin(bx + c) + d$  (h),  $x$ : päivän järjestyksennumero

pienin päivä 21.6 :  $f(172) = 20,25$   
 lyhin -11- 22.12 :  $f(356) = 4,75$

$$31 + 28 + 31 + 30 + 31 + 21 = 172$$

↑ ↑ ↑ ↑ ↑  
 tammikuu helmikuu maaliskuu huhtikuu toukokuu  
 v. 2019 ei ollut karkausvuosi

$$31 + 28 + 31 + 30 + 31 + 30 + 31 + 31 + 30 + 31 + 30 + 22 = 356$$

$$d = \frac{20,25 + 4,75}{2} = 12,5$$

$$a = 20,25 - 12,5 = 7,75 \quad \text{TAI: } a = 12,5 - 4,75 = 7,75$$

$$\text{TAI: } 2a = 20,25 - 4,75 \Rightarrow a = 7,75$$

jaksot:  $\frac{2\pi}{b} = 2(356 - 172) \Rightarrow b = \frac{2\pi}{368} \approx 0,0171$