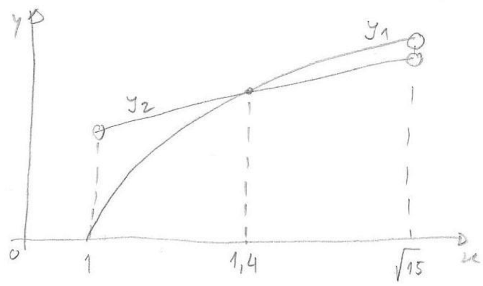
17)

$r_1 = 7 \quad x \in \left]8-7, \sqrt{8^2-7^2}\right[= \left]1, \sqrt{15}\right[$

$r_2 = 8$

$d = 9 + x$

$$\underbrace{\frac{\sqrt{(15^2 - x^2)(x^2-1)}}{x}}_{y_1} = \underbrace{9+x}_{y_2}$$



R: $x \approx 1,4$

18) $(f \circ g)(x) = 7 \Leftrightarrow f(g(x)) = 7 \Leftrightarrow 2g(x) + 1 = 7 \Leftrightarrow 2g(x) = 6 \Leftrightarrow g(x) = 3$ (B)

19.a) $r = \frac{3}{5}R$

Percentagem pedida $= 50\left(1 - \sqrt{1 - \left(\frac{\frac{3}{5}\cancel{R}}{\cancel{R}}\right)^2}\right) = 50\left(1 - \sqrt{1 - \left(\frac{3}{5}\right)^2}\right) =$

$= 50\left(1 - \sqrt{1 - \frac{9}{25}}\right) = 50\left(1 - \sqrt{\frac{16}{25}}\right) =$

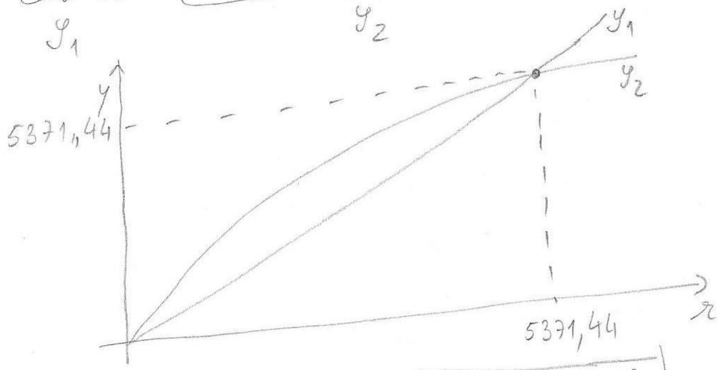
$= 50\left(1 - \frac{4}{5}\right) = 50 \times \frac{1}{5} = 10\%$ (C)

19.b) $R = 6400$

$h = r$

Substituindo na igualdade $r = \frac{R}{h+R}\sqrt{h^2 + 2hR}$, teremos

$$\underbrace{r}_{y_1} = \underbrace{\frac{6400}{r + 6400}\sqrt{r^2 + 2 \times 6400\, r}}_{y_2}$$

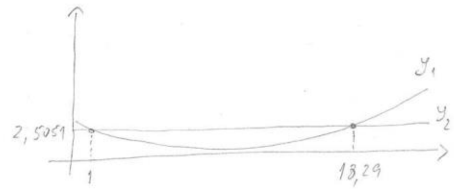


Percentagem $= 50\left(1 - \sqrt{1 - \left(\frac{5371,44}{6400}\right)^2}\right) \approx 23\%$

20) a) $f(21) - f(0) \approx 0,7$ (B)

b) $f(1) = 2,5051$

$$\underbrace{f(x)}_{y_1} = \underbrace{2,5051}_{y_2}$$



R: $21 - 18,29 \approx 2,7$ m

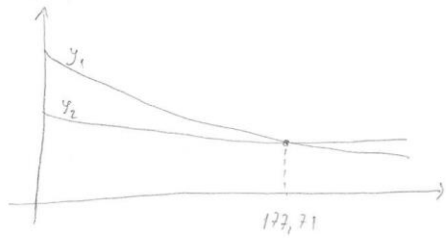
21. a) $a(0) = 1,8 - (0,216 + 0,0039 \times 0)^{\frac{2}{3}} = 1,44$

Rácio $= 0,9$

R: $1,44 - 0,9 = 0,54$ (B)

b) $a(t_1)$ $a(2t_1)$ on a number line with t_1, $2t_1$

$$\underbrace{a(2t_1)}_{y_1} = \underbrace{\frac{a(t_1)}{2}}_{y_2}$$



$y_1 = 1,8 - (0,216 + 0,0039(2x))^{\frac{2}{3}}$

$y_2 = \dfrac{1,8 - (0,216 + 0,0039x)^{\frac{2}{3}}}{2}$

$177,71 \approx 178$ minutos $= 2$h58m

22) C

23. a) $m(0) = \dfrac{30(1+0,006\times 0)^3 - 29}{(1+0,006\times 0)^2} = 1$

$m(1) = \dfrac{30(1+0,006\times 1)^3}{(1+0,006\times 1)^2} \approx 1,52$

1 —— 100%

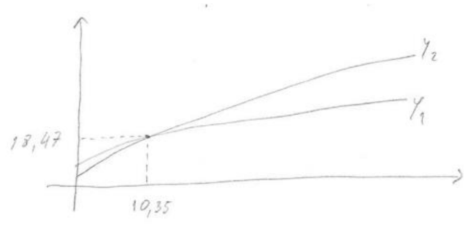
1,52 —— x

$x = \dfrac{1,52 \times 100}{1} = 152$, logo aumenta 52%.

(B)

b) $m(t)$ $m(t+30)$ on a number line with t, $t+30$

$$\underbrace{m(t+30)}_{y_1} = \underbrace{3m(t)}_{y_2}$$



$y_1 = \dfrac{30(1+0,006(x+30))^3 - 29}{(1+0,006(x+30))^2}$

$y_2 = 3 \times \dfrac{30(1+0,006x)^3 - 29}{(1+0,006x)^2}$

$0,35 \times 60 = 21$ s

R: 10 m 21 s

24. a) reta s:

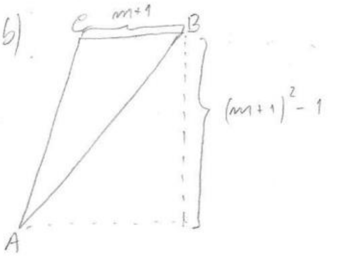
$$y = mx + b$$

$(-1,1) \rightarrow 1 = m \times (-1) + b$

$$1 = -m + b$$

$$m + 1 = b \quad (A)$$

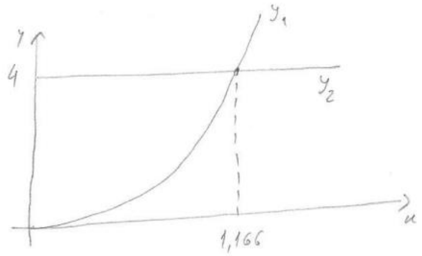
b)



$$A_{\triangle} = \underbrace{\frac{(m+1) \times \left((m+1)^2 - 1\right)}{2}}_{y_1} = \underbrace{4}_{y_2}$$

$$y_1 = \frac{(x+1)\left((x+1)^2 - 1\right)}{2}$$

$$y_2 = 4$$



R: $m \approx 1,17$