Prova matemática C (refazer)

① $y = 10^x$ $\quad a = \frac{1}{\log_5 10} = \log_{10} 5$

$10^a = c$ $\quad (b,c)$ $\quad (b,5)$

$10^{\log_{10} 5} = c \iff c = 5$ $\quad 2^b = 5 \iff b = \log_2 5$

$\frac{1}{\log_5 2}$

② $2^{21} + 4^{12}$

$2^{20} + (2^2)^{12}$

$2^{20} + 2^{24}$

$2^{20} + 2^{23}$

③ $2 \cdot 2^a = 2^b \Rightarrow 2^{a+1} = 2^b \quad \beta = a + 1$

$2^c = \frac{2^a}{4} \rightarrow 2^c = \frac{2^a}{2^2} = 2^{a-2} \quad c = a - 2$

④ $a > 0$ Crescente

⑤ $250.000 \cdot (1+i)^n$ $\quad i = 2,5/100$

$250.000 \cdot (1 + 0,025)^n$ $\quad i = 0,025$

$250000 \cdot (1,025)^n$

⑥ $m(t) = C \cdot 2^{0,01t}$ $\quad m = 2C$

$2C = C \cdot 2^{0,01t}$ $\quad t = \frac{1}{0,01} = \frac{100 \text{ meses}}{12} \rightarrow 8,33$

$2^1 = 2^{0,01t}$ $\quad 1 = 0,01t$

8 anos e 4 meses

$0,33 \times 12 = 4$

FORONI

(7) $P(t) = P_0 \cdot (1+i)^t$ $\quad P(t) = 2P_0$

$\frac{2P_0}{P_0} = P_0 \cdot (1+i)^t$

$2 = (1+i)^t$

$t = \log_{(1+i)} \cdot 2$

(8) a) verdadeira $(0,+\infty)$ é imagem de f

b) ñ intersecta x logo é Falsa

c) ele intersecta em 1 logo é falso

d) falso

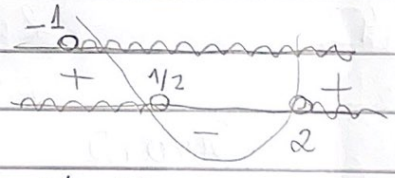
e) falso

(9) $f(x) = \log_{x+1} 2x^2 - 5x + 2$ $\quad x > -1 \quad x \neq 0$

$(x+1)^x = 2x^2 - 5x + 2$

$x_1 = \frac{5+3}{4} \rightarrow 2$ $\quad \Delta = 9$

$x_{11} = \frac{-5-3}{4} \rightarrow 1/2$



$-1 < x < 1/2 \cup x > 2$

(10) a - verdadeira aso

b - verdadeira

c - verdadeira

d - verdadeira*

e - falsa

* $f(x) = \log_b x$

$2 = \log_b 9$

$b^2 = 9$

$b = 3$

(11) $\log_{10}\left(\frac{L}{15}\right) = -0{,}08 \cdot 12{,}5$

$\log_{10}\left(\frac{L}{15}\right) = -1$

$10^{-1} = \frac{L}{15}$

$10^{-1} \cdot 15 = L$

$\frac{1}{10} \cdot \frac{15}{1} = \boxed{\frac{15}{10} = 2}$

$L = 1{,}5$ lumens

(12) $2^{2x} - 8 \cdot 2^x + 12 = 0 \qquad 2^x = y$

$y^2 - 8y + 12 = 0 \rightarrow \boxed{\Delta = 16}$

$x_1 = 6$

$x_{11} = 2$

$2^x = y \rightarrow 2^x = 2^1 \quad \boxed{x = 1}$ já achou

$2^x = y \rightarrow 2^x = 6 \qquad \log_2 6 = x$

$x = \frac{1 + \log_{10} 3}{\log_{10} 2}$