EXERCÍCIOS SOBRE EXPONENCIAL E LOGARITMO

1) Esboce o gráfico das seguintes funções:

a) $f(x) = 2^x$

b) $f(x) = \left(\frac{1}{2}\right)^x$

c) $f(x) = 2^x + 2$

d) $f(x) = \left(\frac{1}{2}\right)^x - 3$

e) $f(x) = 3.2^x$

f) $f(x) = 2^{|x|}$

2) Resolva as seguintes equações exponenciais:

a) $\left(\frac{1}{5}\right)^x = 125$

b) $125^x = 0{,}04$

c) $5^{3x-1} = \left(\frac{1}{25}\right)^{2x+3}$

d) $(2^x)^{x+4} = 32$

e) $4^{x+1} - 9.2^x + 2 = 0$

3) Calcule o valor do logaritmo dado.

a) $\log_8 64$ b) $\log_4 64$ c) $\log_{64} 8$ d) $\log_2 \frac{1}{64}$

e) $\log_2 1$ f) $\log_2 2$ g) $\log_{\frac{1}{2}} 8$ h) $\log_{\frac{1}{3}} 81$

4) Determine o domínio e faça um esboço do gráfico da função dada.

a) $f(x) = \log_{\frac{1}{4}} x$ b) $f(x) = \log_2 x$ c) $f(x) = \ln(x+1)$

d) $f(x) = \ln(x-2)$ e) $f(x) = \log_{\frac{1}{2}}(-x)$ f) $f(x) = -\log_{\frac{1}{3}} x$

5) Reduza a expressão dada em um único logaritmo.

a) $4 \log x + \frac{1}{2} \log y$ b) $5 \ln x + \frac{2}{3} \ln y - 3 \log_6 1$

c) $3 \log_b(x) + \log_b(2y) - 1$ d) $\log_9 x + \log_3 6 - 3 \log_9 z$

6) Sendo $\ln a = 2, \ln b = 5, \ln \frac{3}{5} = -0{,}51$, calcule.

a) $\ln(ab)$ b) $\ln\sqrt{ab}$ c) $\ln(a^2b^3)$ d) $\ln(\frac{3b^2}{5\sqrt{a^3}})$

7) Resolva as seguintes equações:

a) $\ln x + \ln 3 = \ln 9$

b) $\ln(x - 2x^2) + \ln 4 = 0$

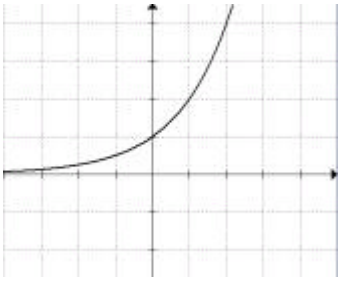
c) $\ln x - \ln(x-1) = \ln 2 + \ln(3-x)$

d) $\ln x^2 - \ln x - \ln 4 = 0$

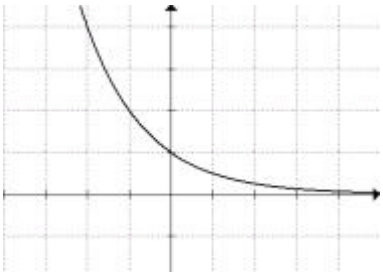
RESPOSTAS DOS EXERCÍCIOS DO CÁLCULO ZERO

EXPONENCIAL

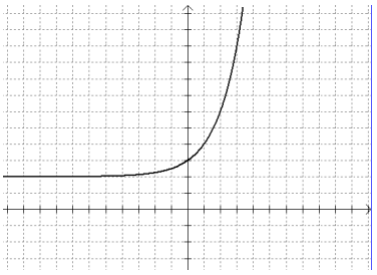
1a)



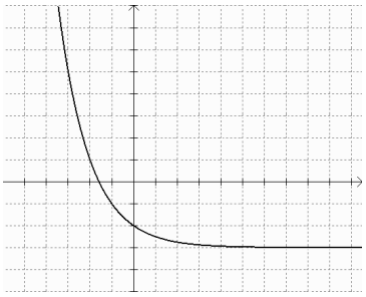
1b)



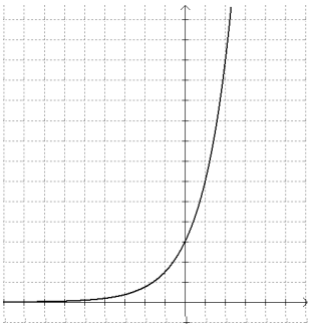
1c)



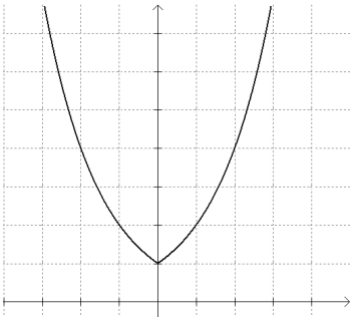
1d)



1e)



1f)



2a) V = {-3}

2b) V = $\left\{-\frac{2}{3}\right\}$

2c) V = $\left\{-\frac{5}{7}\right\}$

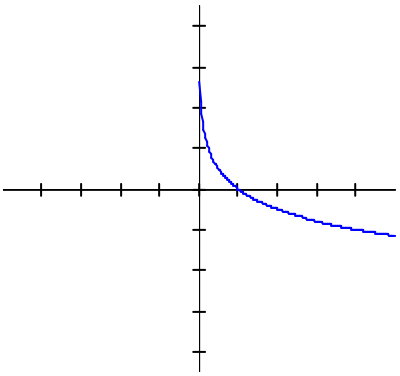
2d) V = {-5; 1}

2e) V = {-2; 1}

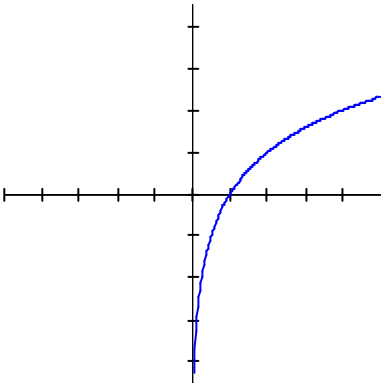
LOGARTIMOS

3) a) 2; b) 3; c) $\frac{1}{2}$; d) –6; e) 0; f) 1; g) –3; h) –4.

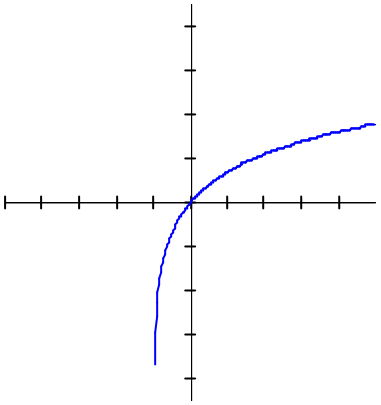
4) a) $D_f = \{x \in R / x > 0\}$



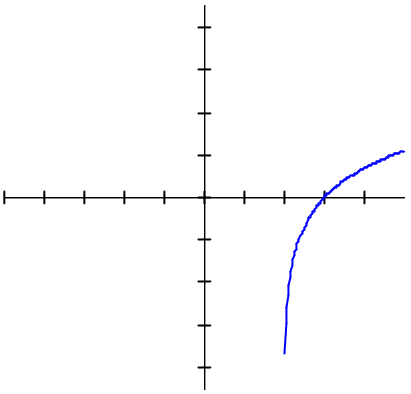
b) $D_f = \{x \in R / x > 0\}$



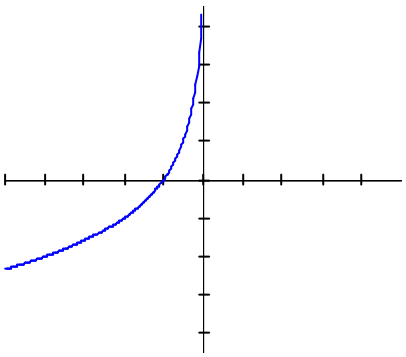
c) $D_f = \{x \in R / x > -1\}$



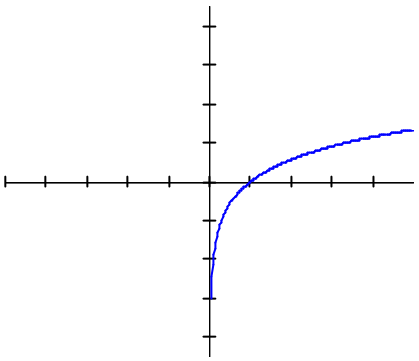
d) $D_f = \{x \in R / x > 2\}$



e) $D_f = \{x \in R / x < 0\}$



f) $D_f = \{x \in R / x > 0\}$



5) a) $\log(x^4\sqrt{y})$; b) $\ln(x^5\sqrt[3]{y^2})$; c) $\log_b\left(\frac{x^3 2y}{b}\right)$; d) $\log_9\left(\frac{36x}{z^3}\right)$.

6) a) 7; b) $\frac{7}{2}$; c) 19; d) 6,49.

7) a) 3; b) não existe; c) 2 ou $\frac{3}{2}$; d) 4.