



The Richter Scale

NAME:

CLASS:

DATE:



Basic

1) Evaluate:

a) e^4

b) $e^{5.2}$

c) $e^{-1.4}$

d) $e^{1.5}$

2) Write the following in logarithmic form:

a) $5^3 = 125$

b) $y = 7^4$

3) Use your calculator to complete the following:

a) $\log_{10} 5.321$

b) $\log_{10} 0.278$

c) $\log_{10} 1$

d) $\ln 13.45$

e) $\ln 0.278$

f) $\ln 0.00001$

4) Evaluate x in each of the following:

a) $x = \log_2 16$

b) $4 = \log_x 81$

c) $2 = \log_7 x$

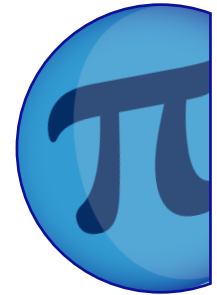


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Core

1) Write the following in logarithmic form:

a) $2^5 = 32$

b) $10^6 = 1,000,000$

c) $16^0 = 1$

d) $g = 6^{-5}$

2) Change the following to exponential form:

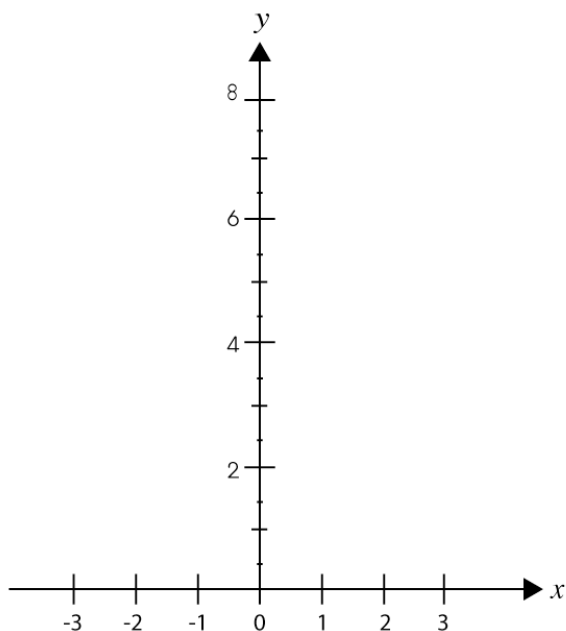
a) $y = \log_5 5$

b) $b = \log_2 a$

c) $2f = \log_9 h$

d) $2x = \log_y z$

3) Sketch the graph of $y = 2^x$ on a grid with $-3 \leq x \leq 3$ and $0 \leq y \leq 8$





The Richter Scale

Core

4) Simplify the following:

a) $\log_{10} 2 + \log_{10} 50$

b) $\log_3 54 - \log_3 6$

c) $\log_3 6 + \log_3 12 - \log_3 8$

d) $\log_2 3 + \log_2 2 - \log_2 6 - \log_2 8$

5) Solve the following for x:

a) $\log_b x + \log_b 4 = \log_b 8$

b) $\log_b 4 + \log_b x = \log_b 12$

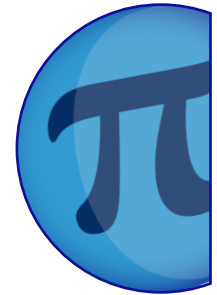


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Advanced

1) Solve the following for x :

a) $\frac{1}{2} \log_b x + \log_b 4 = \log_b 20$

b) $\log_b 16 - 3 \log_b x = \log_b 2$

2) Solve the following for x : $2 \log_b x - \log_b(x - 1) = \log_b(x - 2)$

3) Find y in terms of x .

$$5 \log_b y - 2 \log_b(x + 4) = 2 \log_b y + \log_b x$$

4) The mass M grams of a radioactive isotope after a time of t years is given by the formula $M = M_0 e^{-kt}$, where M_0 = initial mass of the isotope. In four years' time a mass of 20 grams of the isotope is reduced by 15 grams.

a) Calculate k .

b) Calculate the half-life of the substance.



The Richter Scale

ANSWERS

Basic

1) a) 54.598

b) 181.272

c) 0.2466

d) 4.482

2) a) $\log_5 125 = 3$

b) $\log_7 y = 4$

3) a) 0.726

b) -0.556

c) 0

d) 2.599

e) -1.280

f) -11.513

4) a) $x = 4$

b) $x = 3$

c) $x = 49$

Core

1) a) $\log_2 32 = 5$

b) $\log_{10} 1000000 = 6$

c) $\log_{16} 1 = 0$

d) $\log_6 g = -5$

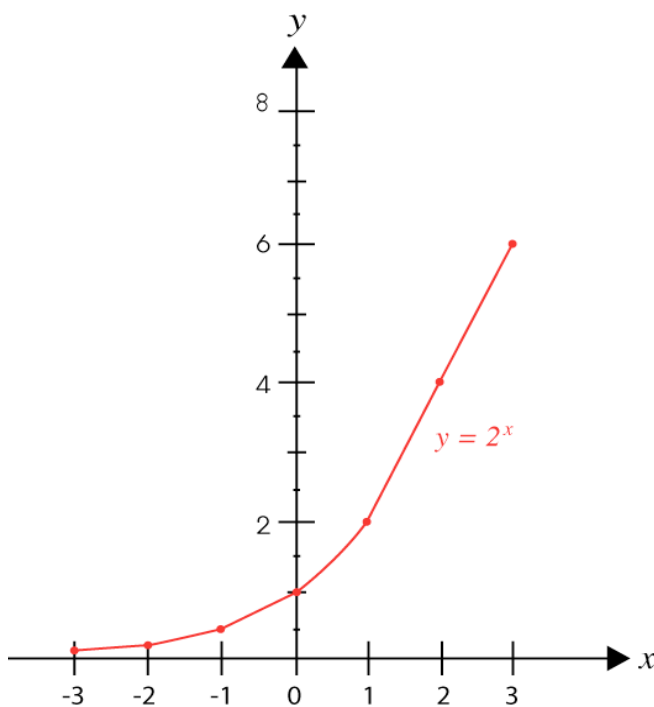
2) a) $5^y = 5$

b) $2^b = a$

c) $g^{2f} = h$

d) $y^{2x} = z$

3)





The Richter Scale

ANSWERS

Core

4) a) 2

b) 2

c) 2

d) -3

5) a) $x = 2$

b) $x = 3$

Advanced

1) a) $x = 25$

b) $x = 2$

2) a) $x = \frac{2}{3}$

3) $y = \sqrt[3]{x(x-4)^2}$

4) a) $k = 0.34$

b) Half-life = two years