

Home: 12Date: 4/7

Handwritten worksheet

<http://www.mathvizza.com>

Both Sides

Bell Work

Directions: Please write a function in terms of hours for the following.



1. A bacteria colony starts with $30,000$ bacteria. It grows at a rate of 3% every 5 hours. $r = 1/5$

$$M = 1.03$$

$$A(h) = 30,000(1.03)^{\frac{1}{5}h}$$

2. Use your function to determine the number of bacteria after 2 days.

$$A(48) \rightarrow 30,000(1.03)^{\frac{48}{5}}$$

Study for quiz

$$A(t) = P \left(1 + \frac{r}{n} \right)^{nt}$$

Start amount \rightarrow P
 r = rate decin.
 n = number of comp.
 t = time (yrs)

1. Compound Interest

2. Exponential decay and growth

$$A(t) = P(m)^{rt}$$

$r = 1/\text{period}$

3. Basic logs. Everything before the properties of addition and subtraction

Objectives

1. The students will practice solving equations with logs

1:1 with Change of Base

$$\log_b x = \log_b y \rightarrow x = y \quad | \quad B^x = B^y \rightarrow x = y$$

$$5^{4x-1} = 5^{x-2}$$

$$4x-1 = x-2$$

$$3x-1 = -2$$

$$3x = -1$$

$$x = -1/3$$

$$9^x = 3^{x+1}$$

$$(3^2)^x = 3^{x+1}$$

$$3^{2x} = 3^{x+1}$$

$$2x = x+1$$

$$x = 1$$

⑦

$$8^{x+2} = 16^x$$

$$(2^{\widehat{3}})^{x+2} = (2^4)^x$$

$$2^{3x+6} = 2^{4x}$$

$$3x+6 = 4x$$
$$\textcircled{6-x}$$

Solving Log Equations

$$\log_a X + \log_a Y = \log_a XY$$

1. Try to use the log properties to write single logs.
2. Try to use the 1:1 property
3. Try writing it in exponential form (only have 1 log)
4. You must check your answers to throw out extraneous solutions.

$$y = \log_{10} x \quad D: (0, \infty)$$

$$x = \square$$

↓
original

$$\log_x - 4 = \log_x - 4$$

$$\log_3 X - \log_3 4 = \log_3 12$$

$$\log_3 \frac{X}{4} = \log_3 12$$

$$\frac{X}{4} = 12$$

$$X = 48$$

$$\begin{aligned} \log_3 48 - \log_3 4 &= \log_3 12 \\ \log_3 12 &= \log_3 12 \end{aligned}$$

$$\log_7 (m+1) + \log_7 (m-5) = 1$$

$$\log_7 [(m+1)(m-5)] = 1$$

$$\log_7 (m^2 - 4m - 5) = 1$$

$$m = 6$$

$$7^1 = m^2 - 4m - 5$$

$$0 = m^2 - 4m - 12$$

$$0 = (m-6)(m+2)$$

$$m-6=0 \quad m+2=0$$

$$m=6$$

$$m=-2$$

~~$$m = -2$$

$$\log_7 (-2+1) + \log_7 (-2-5) = 1$$~~

~~$$\log_7 (-)$$~~

$$m = 6$$

$$\log_7 (6+1) + \log_7 (6-5) = 1$$

$$\log_7 7 + \log_7 1 = 1$$

$$1 + 0 = 1$$

$$1 = 1$$

$$\textcircled{3} \quad \log_2 X = \frac{1}{3} \log_2 27$$

$$\log_2 X = \log_2 (27)^{1/3} \quad \left. \begin{array}{l} \text{cube root} \\ \swarrow \end{array} \right\}$$

$$\log_2 X = \log_2 3$$

$$\textcircled{X=3}$$