

Math 1050 A4.3 Exponential & Log	Name
<b>1. Write in Exponential Form:</b> $\log_2 128 = 7$  $\log 10 = 1$	<b>2. Write in Logarithm Form:</b> $\left(\frac{1}{3}\right)^3 = \frac{1}{27}$  $5^0 = 1$
<b>3. Evaluate:</b> $\log_2 16$  $\log_8 8$	<b>4. Evaluate:</b> $\log_2 2^5$  $\log_3 1$
<b>5. Evaluate:</b> $\log_5 125$  $\log_{525} \frac{1}{5}$	<b>6. Evaluate:</b> $\log_7 16,807$  $\log_8 1$

Jesse invests \$3000 in an account that compounds interest at an annual rate of 5%. The following equation represents Jesse's balance, where  $A$  is the final amount after  $t$  years.

$$A = 3000 \left(1 + \frac{.05}{12}\right)^{12t}$$

How is the interest on Jesse's account compounded?

- ☐ (A) annually
- ☐ (B) monthly
- ☐ (C) quarterly
- ☐ (D) weekly

7.

8. In Jan 2015, you discover 200 cockroaches, and they double every 2 months.	9. In 2000, they discover that a population of 50 Tigers is decreasing at a rate of 3% every year.
---	--

Equation? :

How many will there be in 7 months?

Find when there will be 12,800 cockroaches.  
(Use a table, graph or some other method.)

Equation? :

How many tigers will there be in 10 years?

Find the year there will be only 10 tigers, assuming the trend continues.  
(Use a table, graph or some other method.)

10. The function  $f(x) = \log_9 x$  is the logarithmic function with base \_\_\_\_\_. So  $f(9) = \underline{\hspace{1cm}}$ ,  $f(1) = \underline{\hspace{1cm}}$ ,  $f(1/9) = \underline{\hspace{1cm}}$ ,  $f(81) = \underline{\hspace{1cm}}$ , and  $f(3) = \underline{\hspace{1cm}}$ .

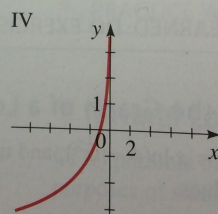
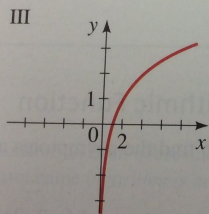
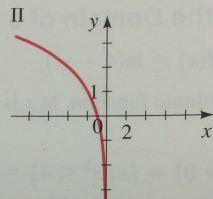
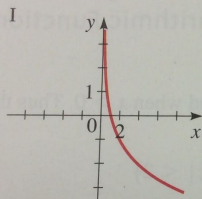
11. The function  $y = 20(0.975)^x$  models the intensity of sunlight beneath the surface of the ocean. The output  $y$  represents the percent of surface sunlight intensity that reaches a depth of  $x$  feet. The model is accurate from about 20 feet to about 600 feet beneath the surface.

A. Find the percent of sunlight 50 feet beneath the surface of the ocean.

B. Find the percent of sunlight at a depth of 370 feet.

4. Match the logarithmic function with its graph.

- (a)  $f(x) = \log_2 x$     (b)  $f(x) = \log_2(-x)$   
(c)  $f(x) = -\log_2 x$     (d)  $f(x) = -\log_2(-x)$



12.

13.

### SKILLS

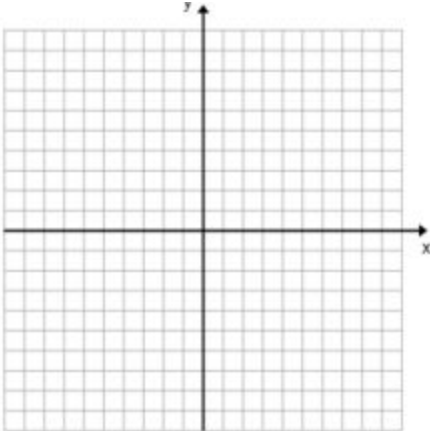
5-6 ■ Complete the table by finding the appropriate logarithmic or exponential form of the equation, as in Example 1.

5.

Logarithmic form	Exponential form
$\log_8 8 = 1$	<input type="text"/>
$\log_8 64 = 2$	<input type="text"/>
<input type="text"/>	$8^{2/3} = 4$
<input type="text"/>	$8^3 = 512$
$\log_8 \left(\frac{1}{8}\right) = -1$	<input type="text"/>
<input type="text"/>	$8^{-2} = \frac{1}{64}$

14. Isolate the Log, and then Evaluate  
 $3\log_5 x - 6 = 3$

15. Isolate the Log, and then Evaluate  
 $\frac{1}{4}\log_2 x = 1$

<p>16. Isolate the Log, and then Evaluate</p> $4\log_5 x - 40 = -40$	<p>17. Isolate the Log, and then Evaluate</p> $5\log_3 x + 30 = 10$
<p>18. Isolate the Log, and then Evaluate</p> $\frac{1}{2}\log x - 3 = -1$	<p>19. Isolate the Log, and then Evaluate</p> $\frac{1}{4}\log(5 - 2x) = 0$
<p>20. Graph the following</p> $f(x) = \frac{x^2 + 5x + 4}{x - 3}$ <p>VA</p> <p>HA</p> <p>x-intercept(s)</p> <p>y-intercept(s)</p> <p>Slant Asy</p>	
<p>21. Find all zeros then graph:</p> $f(x) = 2x^3 - 8x^2 + 9x - 9$	