

Name:

Class Period:

SM3

WS 7.B - Exponential and Log Graphs

1. Write in Exponential Form: $\log_2 128 = 7$ $\log 10 = 1$	2. Write in Logarithm Form: $\left(\frac{1}{3}\right)^3 = \frac{1}{27}$ $5^0 = 1$
3. Evaluate: $\log_2 16$ $\log_8 8$	4. Evaluate: $\log_2 2^5$ $\log_3 1$
5. Evaluate: $\log_5 125$ $\log_5 \frac{1}{25}$	6. Evaluate: $\log_7 16,807$ $\log_8 1$

7.

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

8. In Jan 2015, you discover 200 cockroaches, and they double every 2 months.

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.)

9. In 2000, they discover that a population of 50 Tigers is decreasing at a rate of 3% every year.

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.)

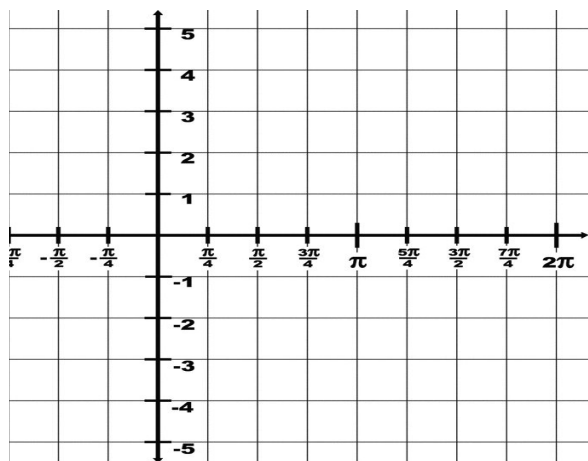
10. Find the equation that matches the following table:

time	Amount
0	6
2	12
4	24
6	48

11. Using synthetic division, find the value of a that would make $x-5$ a factor of $f(x) = x^3 - 8x^2 + 11x + a$

12. Sketch the graph. State the amplitude, period, and any transformations.

$$y = 3\cos(4x) - 2$$



13. Decide if the equation represents exponential growth or exponential decay. Then find the initial amount (y-intercept).

A. $y = 12 \cdot \left(\frac{17}{10}\right)^x$

B. $f(x) = 3 \cdot \frac{5}{6}^x$

14. 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.

15. You are designing a rectangular swimming pool that is to be set into the ground. The width of the pool is 5 feet more than the depth, and the length is 35 feet more than the depth. The pool holds 2000 cubic feet of water. What are the dimensions of the pool?

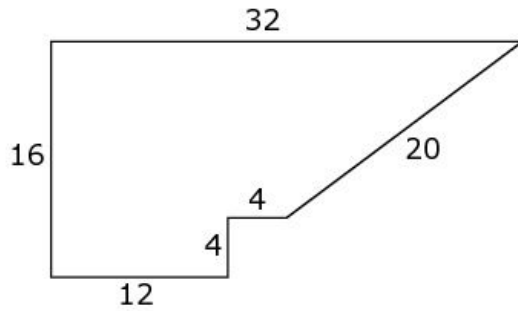
A. Write a Volume Equation for this situation.

B. Graph in calculator to find the dimensions.

<p>16. Isolate the Log, and then Evaluate $3\log_5 x - 6 = 3$</p>	<p>17. Isolate the Log, and then Evaluate $\frac{1}{4}\log_2 x = 1$</p>
<p>18. Isolate the Log, and then Evaluate $4\log_5 x - 40 = -40$</p>	<p>19. Isolate the Log, and then Evaluate $5\log_3 x + 30 = 10$</p>
<p>20. Isolate the Log, and then Evaluate $\frac{1}{2}\log x - 3 = -1$</p>	<p>21. Isolate the Log, and then Evaluate $\frac{1}{4}\log (5 - 2x) = 0$</p>

22.

Kim mows lawns on the weekends. The shape of her most unusual yard is shown, with dimensions in feet.



How many square feet of grass does Kim mow in this lawn?

- (A) 336 sq ft
- (B) 352 sq ft
- (C) 360 sq ft
- (D) 368 sq ft

Hint: *Area of Triangle* = $\frac{1}{2}bh$ *Area of a Rectangle* $A=bh$