

1. Identify the following as exponential growths or exponential decays.

a) $y = 2\left(\frac{1}{6}\right)^x$

b) $y = 5\left(\frac{7}{3}\right)^{-x}$

c) $y = e^{2x}$

2. In the exponential function $f(x) = ab^{x-c} + d$, describe the effect a,b,c, and d have on the graph.

3. Rewrite the following equations in log form.

a) $216 = 6^3$

b) $5^{-3} = \frac{1}{125}$

c) $\left(\frac{2}{3}\right)^{-2} = \frac{9}{4}$

4. Rewrite the following equations in exponential form.

a) $\log_3 81 = 4$

b) $\log_8 \frac{1}{64} = -2$

c) $\log_{25} 5 = \frac{1}{2}$

5. Evaluate without a calculator.

a) $\log_4 64$

b) $\log_{\frac{1}{3}} 27$

c) $\log_{\otimes} \otimes^\Omega$

6. Find the inverse of each.

a) $y = \log_{29} x$

b) $y = 3^x - 1$

c) $y = \ln(x - 1)$

7. Expand or condense.

a) $2 \log x + \log y - 3 \log z$

b) $\ln 3x^2y^7\sqrt{z}$

c) $\log_6 \frac{6x^2}{y^8}$

8. Use your table to find the following.

a) $\log 789$

b) $\log(.123)$

9. Solve the following.

a) $\frac{1}{9} = 27^x$

b) $\log_{30}(2x+5) = \log_{30}(x-2)$

c) $3\log_4(x-1) = 6$

d) $3(5)^{2x-3} = 13$

10. Find the inverses of each of the following.

a) $y = 6^x - 3$

b) $y = \log_5(x-4)$

c) $y = 12^{x+3} - 5$

11. Find an exponential function whose graph passes through the points $(2,12.5)$ and $(3,31.25)$.

12. Find a power function whose graph passes through the points $(2.9,9.4)$ and $(7.3,12.8)$

13. Suzy put \$1,000 in the bank on January 1, 2000. If she received 6% interest compounded continuously, how much as in her account on January 1, 2008?

14. The population of Suzyville has been decreasing by 6.5% every year since she left in 1997 when the population was 43,500. How long until the population is 20,000?

15. Suzy bought a new car in 2001 for \$25,000. In 2008 it was worth \$13,000. By what percent did its value decrease each year (round to the nearest tenth of a percent)?

16. Suzy cooked some soup for lunch. The soup was 200° in the pot while the room temperature was 72° . She put some in a bowl to cool while she took a 15 minute shower. If the cooling rate of the soup is $r = .056$, what will the temperature of the soup be after her shower? How long would it take for the soup to cool to 100° ?