

Algebra II
Exp/Log Review

Name _____

Tell whether the function represents exponential growth or decay. Identify the percent increase or decrease.

1. $f(x) = \left(\frac{1}{3}\right)^x$

2. $f(x) = 5^x$

3. $f(x) = \frac{1}{3}e^x$

4. $f(x) = 3e^{-0.75x}$

5. You deposit \$1500 in an account that pays 7% annual interest. Find the balance after 2 years when the interest is compounded monthly.

Simplify each expression.

6. $e^4 \cdot e^{11}$

7. $\frac{20e^3}{10e^6}$

8. $(-3e^{-5x})^2$

Find the inverse of the following

9. $f(x) = 8^x$

10. $f(x) = \log_3 x$

11. $y = \ln(x - 4)$

Find the value of x.

12. $2^x = 8$

13. $\log_x 36 = 2$

14. $\log_5 x = -3$

15. $\ln e^4 = x$

16. $\log_9 x = \frac{3}{2}$

17. $\log 1 = x$

Sketch. Describe the transformations from the parent function, domain, range and equations of asymptotes.

18. $g(x) = \frac{1}{2} \log_4(x+5)$

19. $f(x) = e^x - 8$

20. $f(x) = -\log_2(x-1) + 4$

21. $f(x) = \frac{1}{x-3} - 1$

Solve the following equations. Check for extraneous solutions.

22. $5^x = 8$

23. $\log_3(2x - 5) = 2$

24. $\ln x^2 + 2x = 3$

25. $\frac{18-6x}{x^2-3x} = \frac{5}{x}$

26. $\frac{-2}{x-1} = \frac{x-8}{x+1}$

27. $16^{3x-2} = \left(\frac{1}{4}\right)^{5-x}$

28. $\log(4x + 1) = \log 25$

29. $2e^{3x} + 6 = 10$

30. The length, L (in centimeters) of a scalloped hammerhead shark can be modeled by the function $L = 266 - 219e^{-0.05t}$, where t is the age (in years) of the shark.

a. How old is the shark that is 200 centimeters long?

b. How long is a shark that is twice as old as the shark in part (a)?