Exponential and Logarithmic Functions Worksheet 2 Algebra 2 Name _____
Date _____ Per. _____

Evaluate each of the following.

1. $\log_3 3 =$
2. $\log_3 9 =$
3. $\log_3 27 =$
4. $\log_3 1 =$
5. $\log_3 \frac{1}{3} =$
6. $\log_3 \frac{1}{9} =$
7. $\ln(1)$
8. $\log_2 2 =$
9. $\ln(2)$
10. $\log_2 1 =$
11. $\ln(e)$
12. $\log_2 \frac{1}{4} =$

Change the following from exponential form to logarithmic form.

13. $5^2 = 25$
14. $5^{-2} = \frac{1}{25}$
15. $A^B = C$
16. $3^0 = 1$
17. $e^x = 5$
18. $e^0 = 1$

Change the following from logarithmic form to exponential form.

19. $\log_3 9 = 2$
20. $\log_3 \frac{1}{9} = -2$
21. $\log_4 8 = \frac{3}{2}$
22. $\log_B C = A$
23. $\ln(x) = \frac{1}{2}$
24. $\ln(1) = 0$

Simplify.

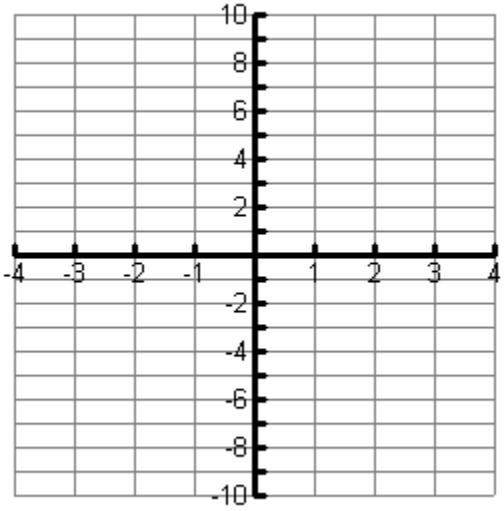
25. $e^{3\ln x}$
26. $e^{\ln(x+4)}$
27. $\ln e^x$
28. $\ln e^{x-8}$

29. The population of whooping cranes was about 22 in 1940 and grew at an exponential rate to about 194 in 2003.

a. Use the exponential growth function $A(t) = Pe^{rt}$ to determine the growth rate.

b. If the flock continues to grow at the same rate, how large will it be in 2020?

30. Graph the following inverse functions on the same graph. Then find the following characteristics about each graph. Write "**none**" if it does not exist.



$y = 4^x$

Domain _____

Range _____

x-intercept _____

y-intercept _____

Equation of asymptote _____

End behavior

$As\ x \to -\infty,\ f(x) \to$ _____

$As\ x \to +\infty,\ f(x) \to$ _____

$y = \log_4 x$

Domain _____

Range _____

x-intercept _____

y-intercept _____

Equation of asymptote _____

End behavior

$As\ x \to 0,\ f(x) \to$ _____

$As\ x \to +\infty,\ f(x) \to$ _____