4.1-4.4 Quiz Review
Algebra 3

Name _____
Date _____ Block ____

4.1 Exponential Functions, Growth, and Decay

Tell whether the function shows growth or decay

1. $f(x) = \left(\frac{1}{4}\right)^x$
2. $f(x) = \frac{1}{5}(0.2)^x$
3. $f(x) = 14(1.4)^x$
4. $f(x) = 6.4\left(\frac{3}{8}\right)^x$

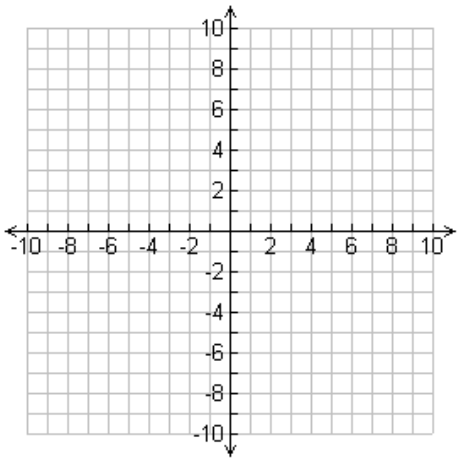
5. Suppose that the number of bacteria in a culture was 1000 on Monday and the number has been increasing at a rate of 50% per day since then.
   a. Write a function representing the growth of the culture per day.

   b. Predict the number of bacteria in the culture the following Monday.

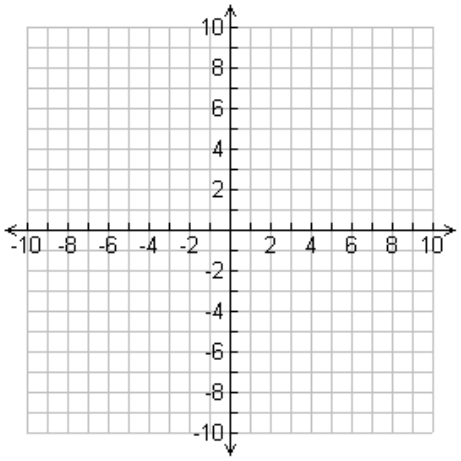
4.2 Inverses of Relations and functions

Graph each function. Then write and graph its inverse

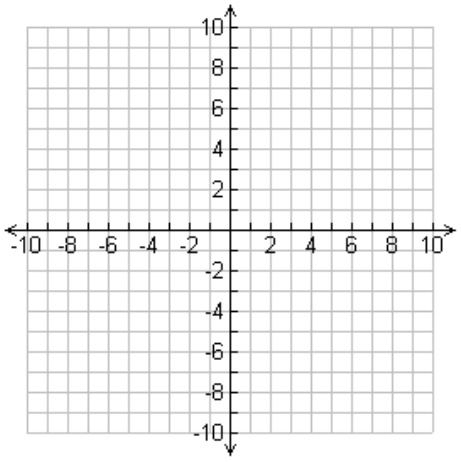
6. $f(x) = x + 2.1$



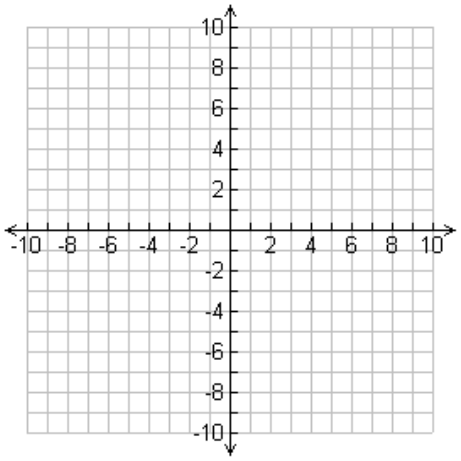
7. $f(x) = \frac{3}{4} - x$



8. $f(x) = 5x + 4$



9. $f(x) = .4\left(\frac{x}{4} + 1.5\right)$



4.3 Logarithmic Functions

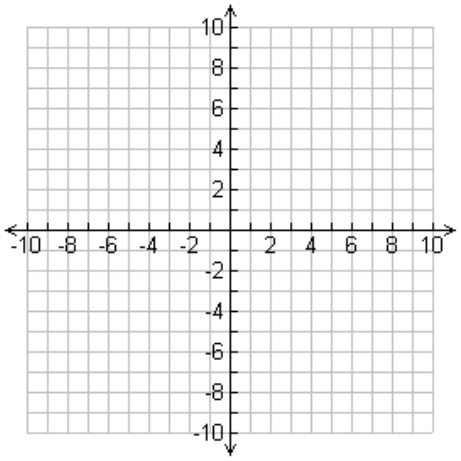
Write the exponential equation in logarithmic form.

10. $3^2 = 9$ 11. $17.6^0 = 1$ 12. $2^{-2} = \frac{1}{4}$ 13. $0.5^x = 0.0625$

Write each logarithmic equation in exponential form.

14. $\log_4 64 = 3$ 15. $\log_{\frac{1}{5}} 25 = -2$ 16. $\log_{0.99} 1 = 0$ 17. $\log_e x = 5$

18. Use the given x-values to graph $f(x) = \left(\frac{5}{6}\right)^x$; $x = -1, 0, 1, 2, 3$. Then graph the inverse function.



4.4 Properties of Logarithms

Express as a single logarithm. Simplify if possible.

19. $\log_3 81 + \log_3 9$ 20. $\log_{\frac{1}{5}} 25 + \log_{\frac{1}{5}} 5$ 21. $\log_{1.2} 2.16 - \log_{1.2} 1.5$

Simplify each expression.

22. $\log_4 256^2$ 23. $\log_7 343$ 24. $17^{\log_{17} 0.73}$

Evaluate

25. $\log_{27} 243$ 26. $\log_{10} 0.01$ 27. $\log_5 625$