Ch. 6 Review – Part 1 (Sections 6.1-6.4)

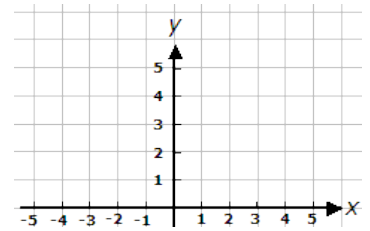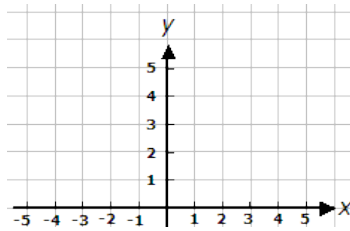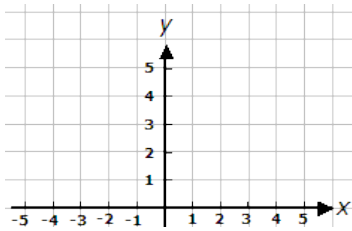**6.1** **Exponential Growth and Decay Functions** *(pp. 295–302)*

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

> Include a minimum of three points and any asymptote.

1. $f(x) = \left(\dfrac{1}{2}\right)^x$

2. $y = 5^x$

3. $f(x) = (0.2)^x$

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

6.2 **The Natural Base e** *(pp. 303–308)*

Simplify the expression.

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

6. $\dfrac{20e^3}{10e^6}$
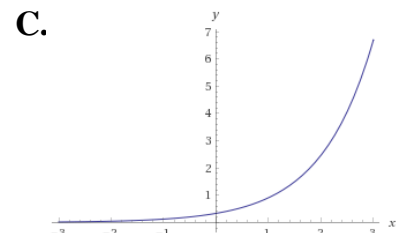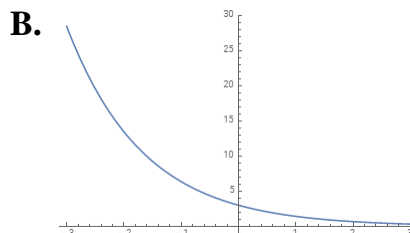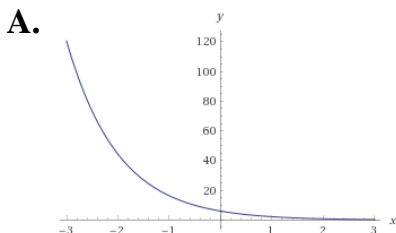
7. $(-3e^{-5x})^2$

Tell whether the function represents *exponential growth* or *exponential decay*. Then match the function with the correct graph.

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

9. $y = 6e^{-x}$

10. $y = 3e^{-0.75x}$

A.

B.

C.

6.3 Logarithms and Logarithmic Functions *(pp. 309–316)*

Evaluate the logarithm.

11. $\log_2 8$

12. $\log_6 \frac{1}{36}$
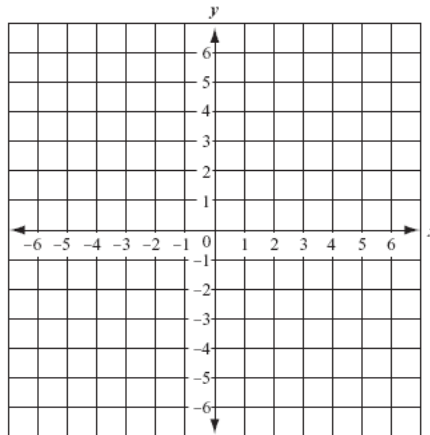
13. $\log_5 1$

Find the inverse of the function.

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

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

16. $y = \log(x + 9)$

17. Graph $y = \log_{1/5} x$.

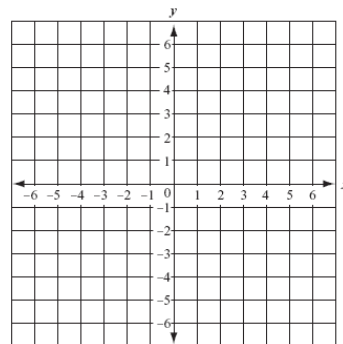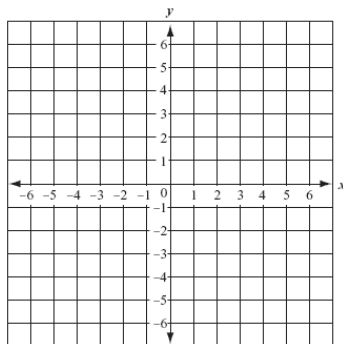Include a minimum of three points and any asymptote.

6.4 Transformations of Exponential and Logarithmic Functions *(pp. 317–324)*

#18-19: Describe the transformation of f represented by g. Then graph both functions.

18. $f(x) = 3^x, \quad g(x) = 3^{x-2} - 5$

19. $f(x) = \log_4 x, \quad g(x) = -2\log_4 x$

#20-21: Write a rule for g.

20. Let the graph of g be a vertical stretch by a factor of 3, followed by a translation 6 units left and 3 units up of the graph of $f(x) = e^x$.

21. Let the graph of g be a translation 2 units down, followed by a reflection in the y-axis of the graph of $f(x) = \log x$.