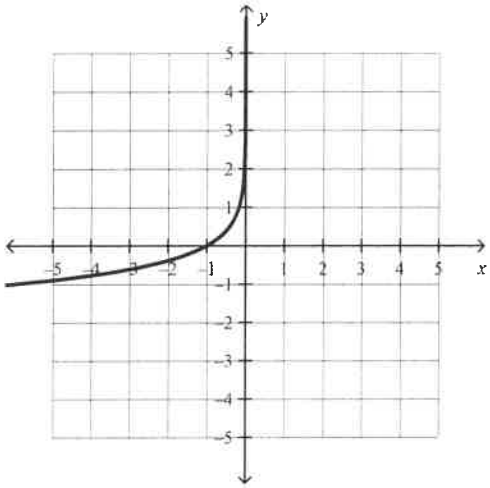
Name: _____ Class: _____ Date: _____ ID: A

Pre-Calculus 12 Chapter 8 Review

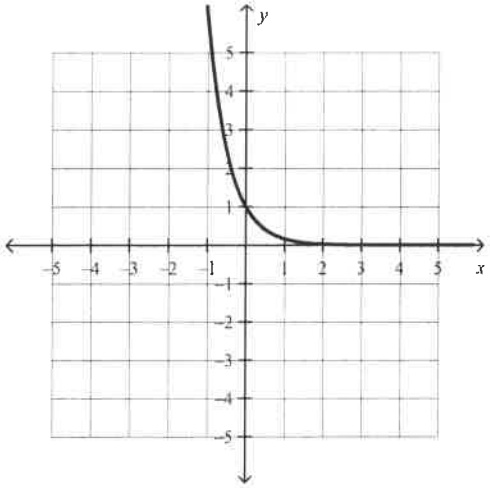
Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ **1.** Which graph represents the inverse of $y = \left(\frac{1}{6}\right)^x$?

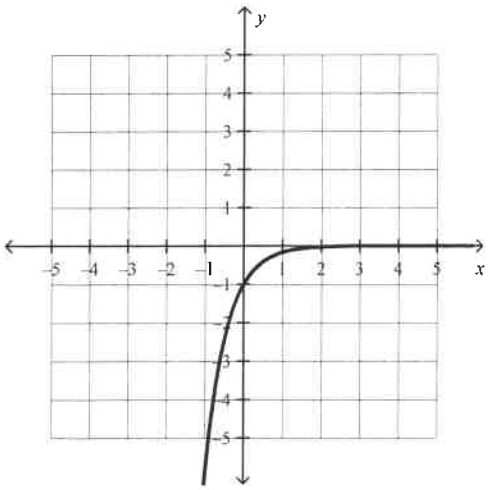
A.



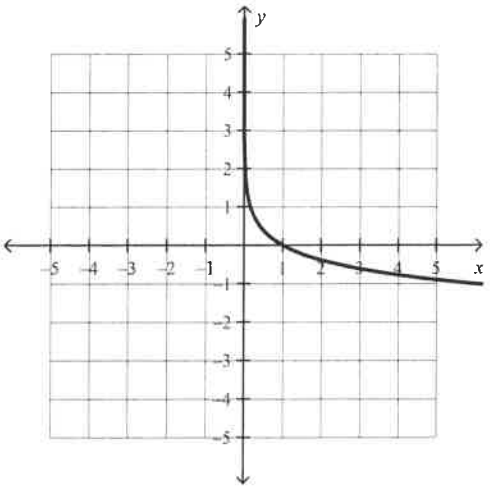
C.



B.

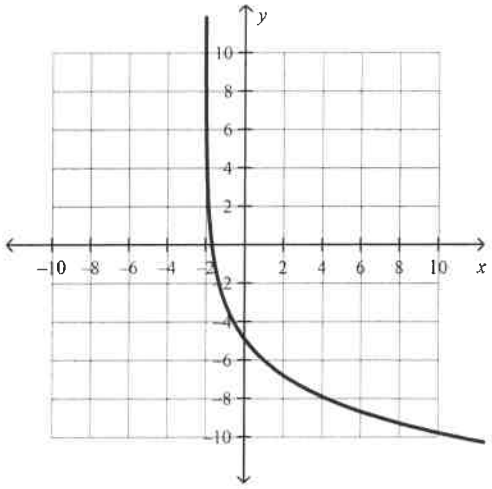


D.

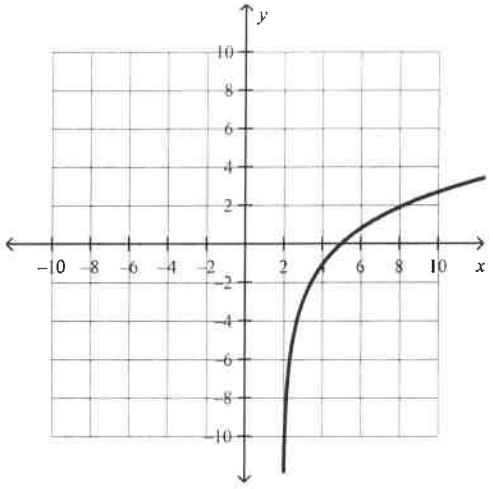


____ **2.** Which graph represents the function $y = -3\log_3[(x-2)] - 3$?

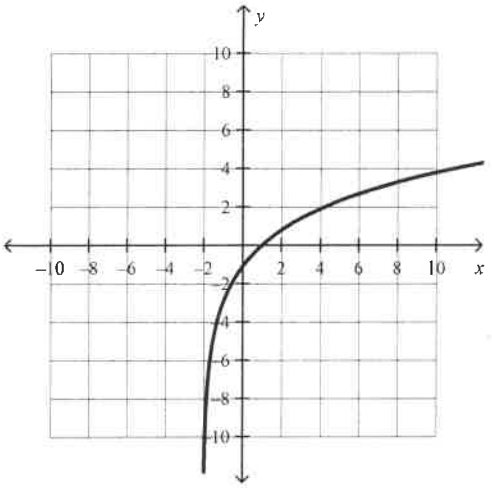
A.



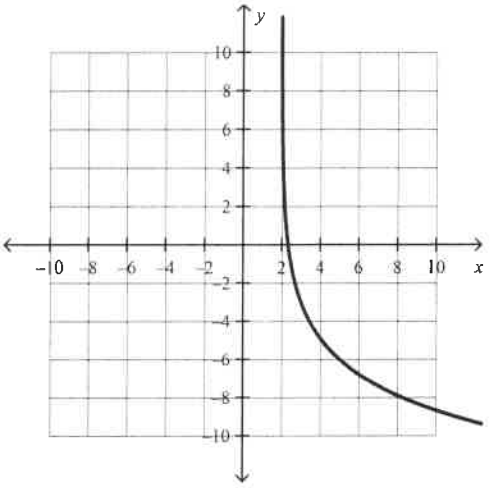
C.



B.

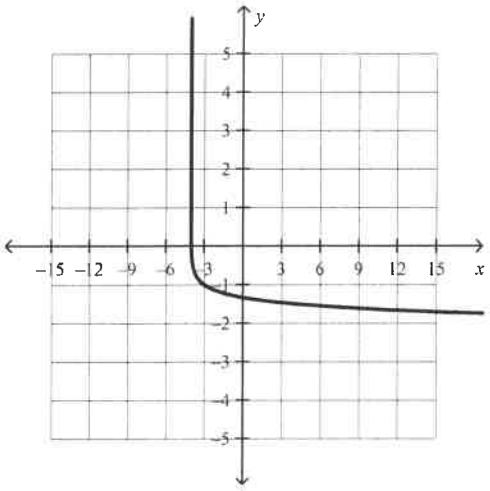


D.

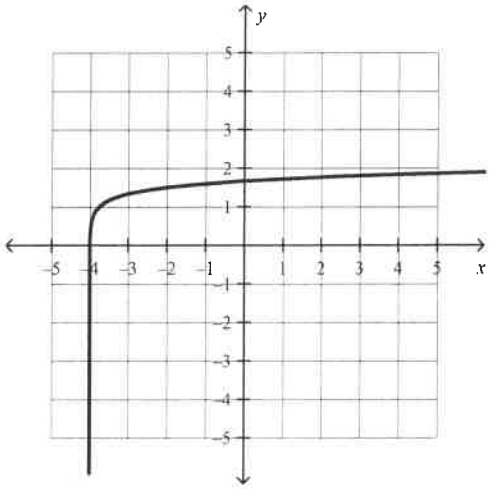


____ 3. Which graph represents the function $y = \frac{1}{3}\log_4(x-3)+4$?

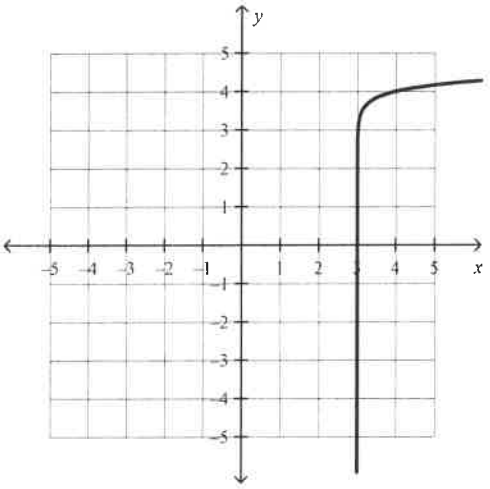
A.



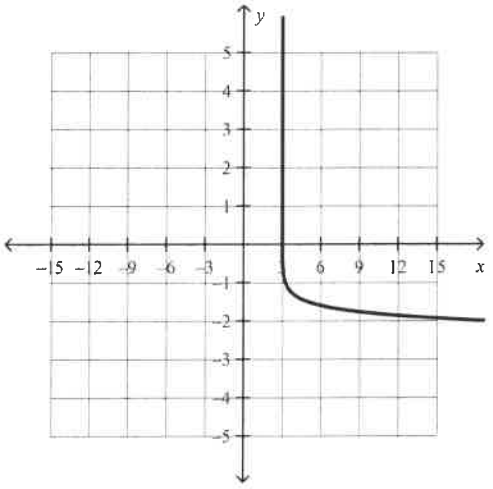
C.



B.



D.



____ **4.** The domain of the function $f(x) = 8\log_6[8(x+8)] + 7$ is

A. $\{x|x < 7, x \in \mathrm{R}\}$
C. $\{x|x > 7, x \in \mathrm{R}\}$
B. $\{x|x < -8, x \in \mathrm{R}\}$
D. $\{x|x > -8, x \in \mathrm{R}\}$

____ **5.** What is the equation for the asymptote of the function $f(x) = -\log_7[-5(x+2)] - 3$?

A. $x = 2$
C. $x = -5$
B. $x = -3$
D. $x = -2$

Short Answer

1. Evaluate $\log_2 \sqrt[4]{32}$ **without a calculator**.

2. Expand the expression $\log_6 rw^2x$ in terms of indiviual logarithms of the variables.

3. Simplify the expression $2\log_2 12 - (\log_2 6 + \frac{1}{3}\log_2 27)$ **without a calculator.**

4. Write the expression $\log_3 r + 6\log_3 v - \log_3 x$ as a single logarithm is simplest form.

5. Simplify $3\log\sqrt{x} + 2\log x - \frac{1}{2}\log x$

6. If $\log 3 = s$, $\log 5 = v$, and $\log 7 = z$, an algebraic expression in terms of s, v, and z for $\log \frac{5}{441}$ is

7. Given $\log_2 7 = k$ write an algebraic expression, in terms of k, for the value of $\log_2 392$.

8. Solve $\log_3 x = \log_3 2 + \log_3 3$.

9. Solve the equation $\log_2 \sqrt{x^2 - 8x} = \log_2 3$.

10. Solve the equation $\log\sqrt[3]{x^2+48x} = \frac{2}{3}$.

11. Solve $\log(3x+15) = 1 + \log(x+3)$.

12. Solve $2\log_4(x+4) - \log_4(x+12) = 1$

13. Solve $1500 = 5e^{0.045x}$ to the nearest thousandth.

14. Solve $9^{3x-10} = 8^{x+6}$. Round your answer to two decimal places.

15. Solve $13(5)^{4x-3} = 8^{2x+5}$. Round your answer to 2 decimal places.

16. Suppose that the population of a small town doubles every 25 years. How long does it take to triple, to the nearest tenth of a year?

17. The eye size of many vertebrates is related to body mass by the logarithmic equation $\log E = \log 10.61 + 0.1964 \log m$, where E is the eye axial length, in millimetres, and m is the body mass, in kilograms. Predict the mass of a vertebrate with an eye axial length of 43 mm. Round your answer to the nearest hundredth of a kilogram.

18. A 200-g sample of a radioactive substance is placed in a chamber to be tested. After 3 h, 140 g of the sample remains. Determine the half-life of this substance, to the nearest hundredth of an hour.

19. For his dream car, Bruce invested $18 000 at 7.8% interest per annum, compounded semi-annually. How long will he have to invest in order to have a total of $35 000? Round to the nearest tenth of a year.

20. In 1997, the population of a city was 795 000. This was an increase of 3.06% from the previous year. Assuming that the population is growing continuously, to the nearest tenth of a year, how long it take for the population to exceed 1 million?