Name _____ Date _____ Class _____

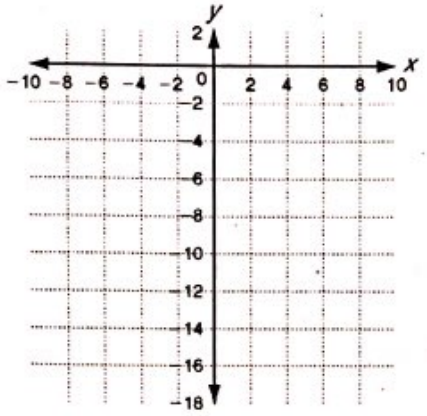
LESSON 4-6

Practice C

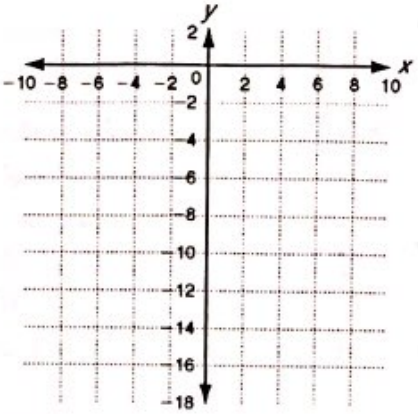
The Natural Base, e

Graph.

1. $f(x) = -e^{x+2}$



2. $f(x) = -e^{x-2}$



Simplify.

3. $\ln e^{5x-3}$ _____

4. $\ln e^{2 \ln 8x}$ _____

5. $e^{4 \ln (x-2)}$ _____

6. $e^{-\ln 4 - x}$ _____

7. $\ln e^{\sqrt{x}}$ _____

8. $\ln e^{\frac{4}{x}}$ _____

Solve.

9. Ariana has a choice of two investments. She can invest $12,000 at 5% for 8 years, or she can invest $9000 at 6.5% for 7 years. Both accounts are compounded continuously. Which investment will result in the greater amount of interest earned?

_____

_____

10. Use the natural decay function, $N(t) = N_0 e^{-kt}$, to find the age of a fossil containing 35% of the original amount of a particular substance. This substance has a half-life of 2450 years.

    a. Find the decay constant.

    _____

    b. Find the age of the fossil.

    _____

Name _____ Date _____ Class _____

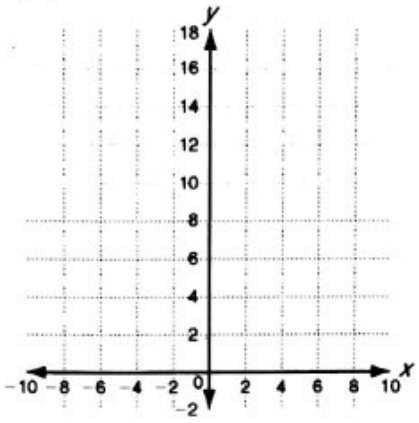
LESSON 4-7

Practice B

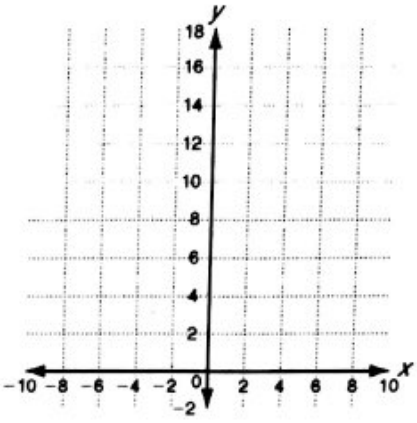
Transforming Exponential and Logarithmic Functions

Graph each function. Find the asymptote. Tell how the graph is transformed from the graph of its parent function.

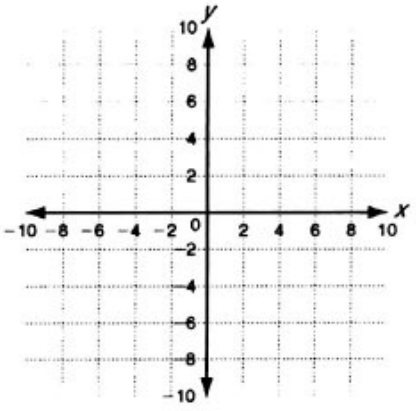
1. $f(x) = 5(2^x)$



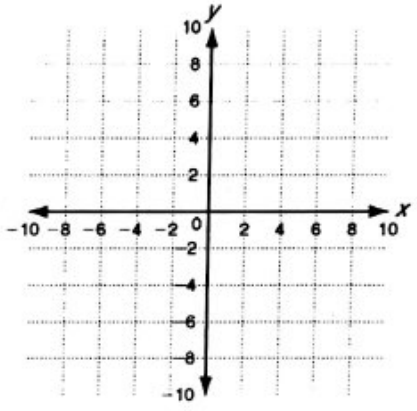
2. $f(x) = 5^{\frac{x}{4}}$



3. $f(x) = \log(x + 5)$



4. $f(x) = 3 + \ln x$



Write each transformed function.

5. The function $f(x) = \log(x + 1)$ is reflected across the y-axis and translated down 4 units. _____

6. The function $f(x) = -8^{x-3}$ is reflected across the x-axis, compressed horizontally by a factor of 0.2, and stretched vertically by a factor of 2. _____

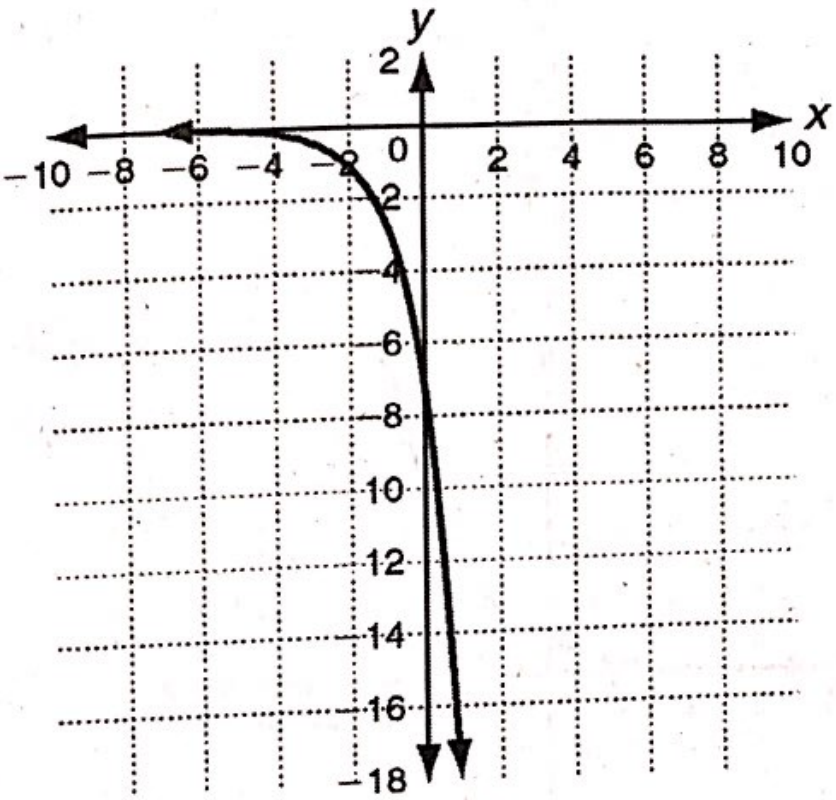
Solve.

7. The function $A(t) = Pe^{rt}$ can be used to calculate the growth of an investment in which the interest is compounded continuously at an annual rate, r, over t years. What annual rate would double an investment in 8 years?

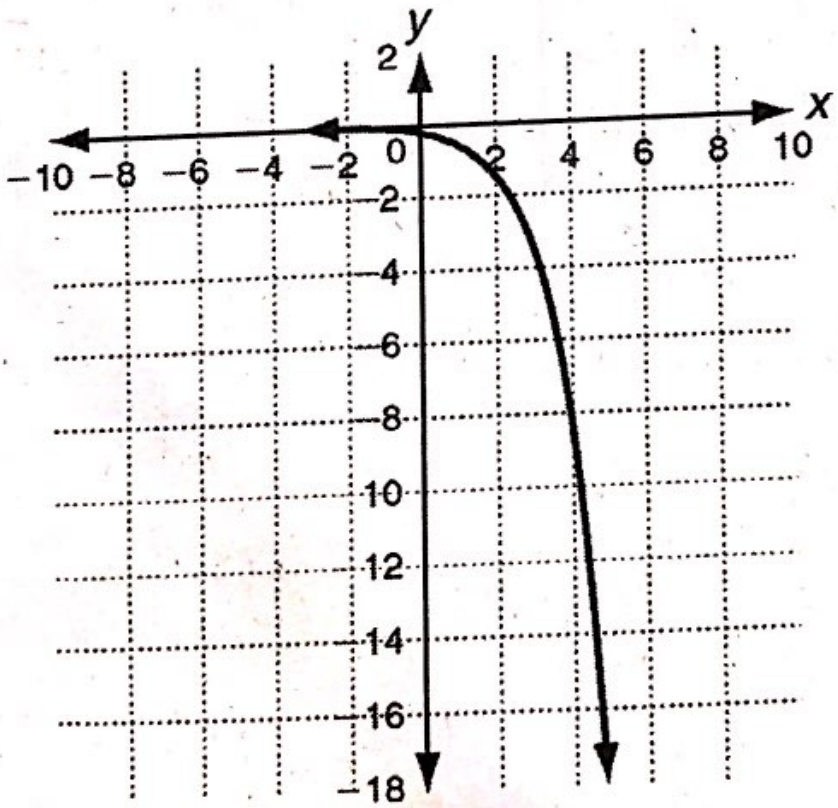
_____

Practice C

1.



2.



3. $5x - 3$

4. $(8x)^2$

5. $(x - 2)^4$

6. $(4 - x)^{-1}$, or $\frac{1}{4 - x}$

7. $\sqrt{x}$

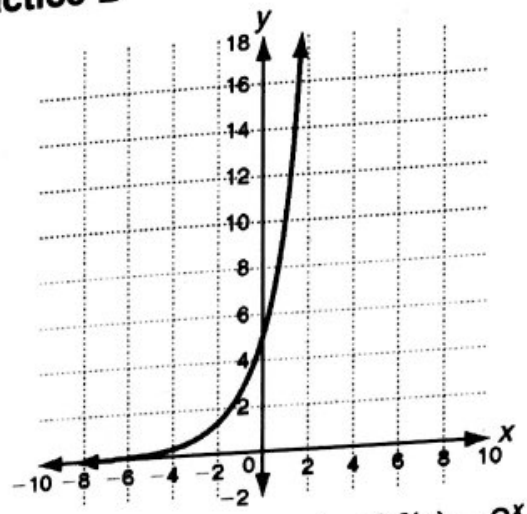
8. $\frac{4}{x}$

9. The investment of $12,000 will earn $5901.90 in interest; the investment of $9000 will earn $5185.56 in interest. The first investment will earn more interest.

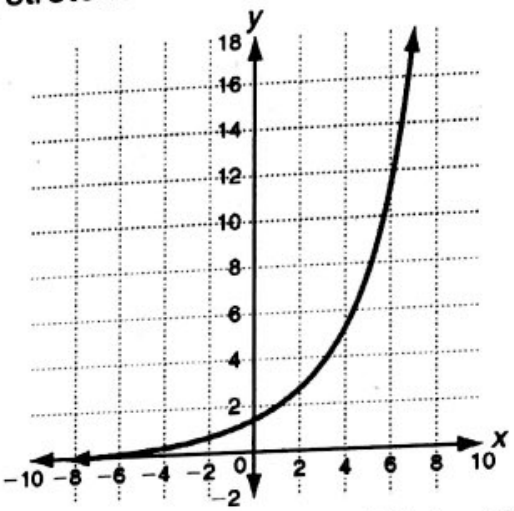
10. a. 0.000283

    b. 3710 years

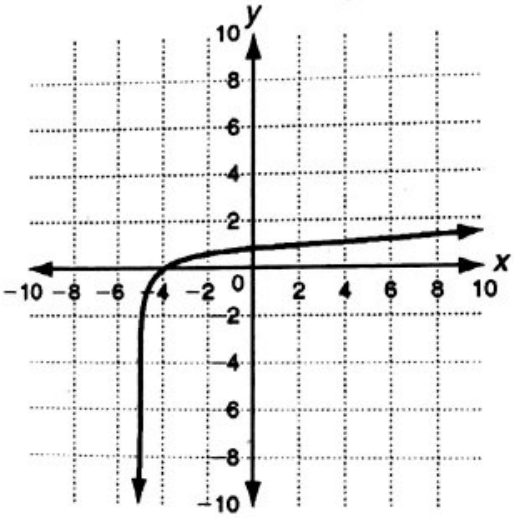
Practice B

1. 

$y = 0$; it is the graph of $f(x) = 2^x$ stretched vertically by a factor of 5.

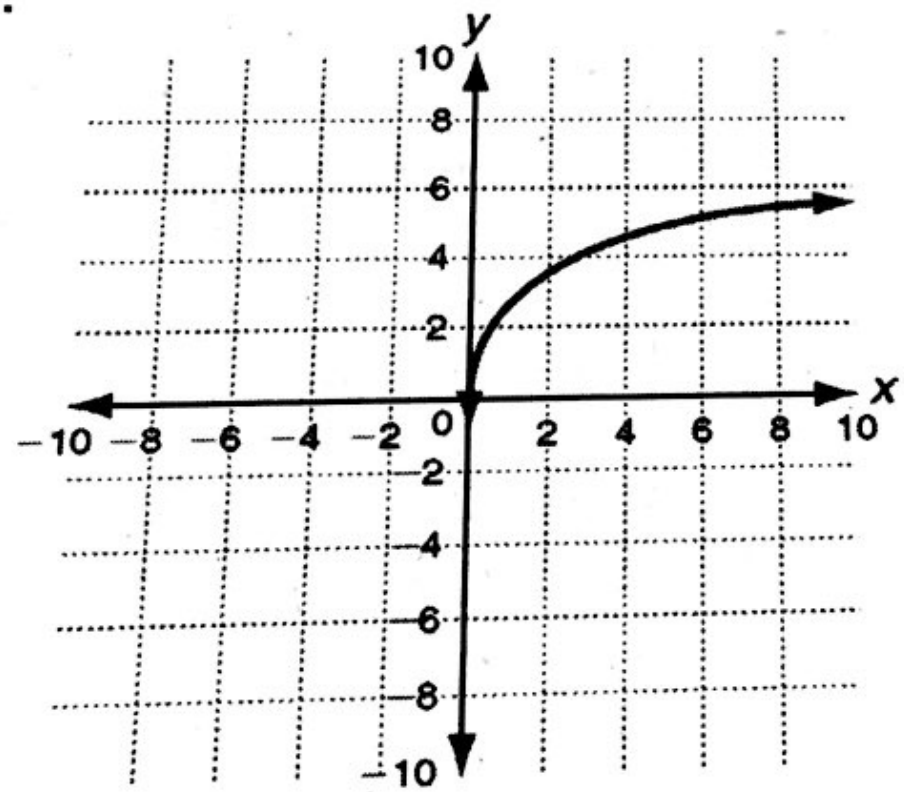
2. 

$y = 0$; it is the graph of $f(x) = 5^x$ stretched horizontally by a factor of 4.

3. 

$x = -5$; it is the graph of $f(x) = \log x$ translated 5 units left.

4.



$x = 0$; it is the graph of $f(x) = \ln x$ translated 3 units up.

5. $g(x) = \log(-x + 1) - 4$

6. $g(x) = 2 \cdot 8^{5x-3}$

7. 8.7%