

Graph the function.

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

2)  $f(x) = \left(\frac{1}{3}\right)^x$

3)  $f(x) = 5^{(x+1)} - 1$

4)  $f(x) = 2^{-x} - 2$

Solve the equation.

5) Solve for  $x$ :  $2^{4x} = 8^x + 5$

Solve the problem.

6) The number of books in a community college library increases according to the function  $B = 7200e^{0.03t}$ , where  $t$  is measured in years. How many books will the library have after 8 year(s)?

7) Since life expectancy has increased in the last century, the number of Alzheimer's patients has increased dramatically. The number of patients in the United States reached 4 million in 2000. Using data collected since 2000, it has been found that the data can be modeled by the exponential function  $y = 4.19549 \cdot (1.02531)^x$ , where  $x$  is the years since 2000. Estimate the Alzheimer's patients in 2025. Round to the nearest tenth.

Write in terms of simpler forms.

8)  $\log_6 XY$

9)  $\log_b \frac{a}{x}$

Graph by converting to exponential form first.

10)  $y = \log_3 (x + 2)$

Solve for  $x$  to two decimal places (using a calculator).

11)  $700 = 500(1.04)^x$

Solve the problem.

12) A country has a population growth rate of 2.4% compounded continuously. At this rate, how long will it take for the population of the country to double? Round your answer to the nearest tenth. 12) \_\_\_\_\_

A) 28.9 years

B) 30 years

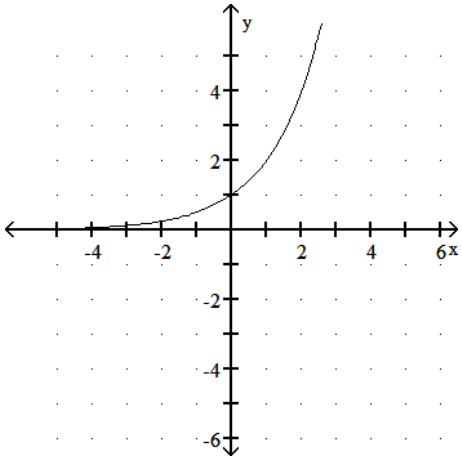
C) 2.9 years

D) .29 years

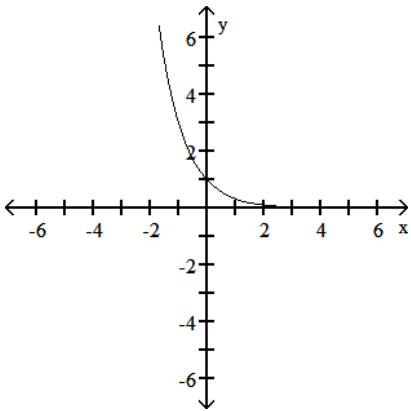
Answer Key

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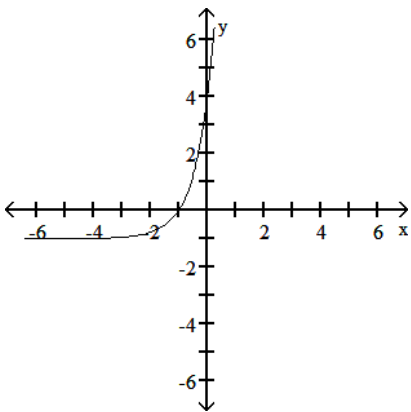
1)



2)



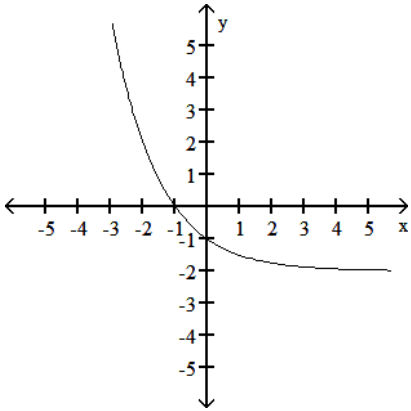
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Answer Key

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4)



5) 15

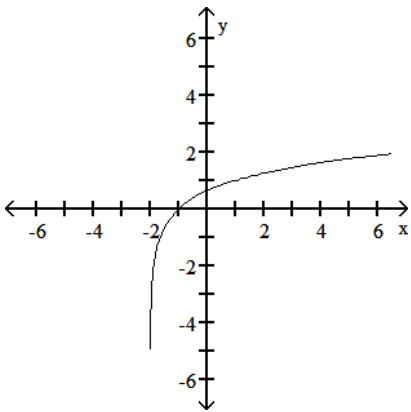
6) 9153

7) 7.8 million

8)  $\log_6 X + \log_6 Y$

9)  $\log_b a - \log_b x$

10)



11) 8.58

12) A