

**Graph each function.**

1.  $y = 6^x$

2.  $y = 9(3)^x$

**Population**

3. The world population in 2000 was approximately 6.08 billion. The annual rate of increase was about 1.26%

a) Find the growth factor for the world population.

b) Suppose the rate of increase continues to be 1.26%. Write a function to model world population growth.

**Without graphing, determine whether each function represents exponential growth or exponential decay.**

4.  $y = 129(1.63)^x$

5.  $y = 12\left(\frac{17}{10}\right)^x$

6.  $f(x) = 4\left(\frac{5}{6}\right)^x$

7.  $y = \frac{1}{100}\left(\frac{4}{3}\right)^x$

**For each function, find the annual percent increase or decrease that the function models.**

8.  $y = 0.65(1.3)^x$

9.  $y = 12\left(\frac{17}{10}\right)^x$

10.  $y = 16\left(\frac{1}{4}\right)^x$

**For each annual rate of change, find the corresponding growth or decay factor.**

11. +70%

12. -75%

13. +12.5%

14. +0.1%

15. The value of an industrial machine has a decay factor of 0.75 per year. After six years, the machine is worth \$7,500. What was the original value of the machine?