

Practice 14

FOR USE WITH SECTION 3.1

Write each expression as a power of 2.

1. $2 \cdot 2 \cdot 2$ **2^3** 2. $2^3 \cdot 4$ **2^5** 3. $8 \cdot 32$ **2^8** 4. $2^5 \cdot 2$ **2^6**
 5. $2^7 \cdot 2^6$ **2^{13}** 6. $16 \cdot 2^5$ **2^9** 7. $2^7 \cdot 8$ **2^{10}** 8. $2^4 \cdot 2^4 \cdot 2^4$ **2^{12}**

Evaluate each expression when $x = 4$.

9. $12(2^x)$ **192** 10. $150(2^x)$ **2400** 11. $3280 \left(\frac{1}{2}\right)^x$ **205** 12. $1024 \left(\frac{1}{2}\right)^x$ **64**

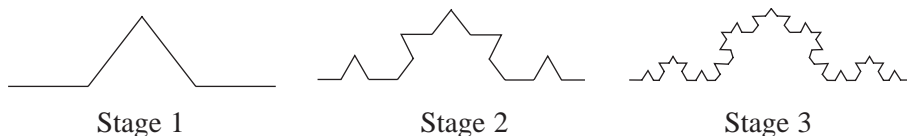
Tell whether each equation represents growth that is *linear*, *exponential*, or *neither*.

13. $y = \frac{1}{3x}$ **neither** 14. $y = \frac{2^x}{5}$ **exponential** 15. $y = \frac{x}{2^5}$ **linear** 16. $y = 6x^2$ **neither**

17. A computer stores information in units called *bits*, each of which can store either of 2 different symbols. Each bit added to the circuit doubles the number of different symbols that can be stored.

- a. How many different symbols can be stored in a *byte*, which is 8 bits? **256 symbols**
 b. A *kilobyte* is 2^{10} bytes. A *megabyte* is 2^{20} bytes. Suppose each byte can store one letter of the alphabet, one number, or one punctuation mark. About how many pages of text can be stored in a kilobyte? In a megabyte? (Assume a page of text contains 1500 letters and/or symbols.) **about $\frac{2}{3}$ of a page; about 700 pages**

18. The diagram below shows the first three stages in the formation of a *fractal* called a “snowflake curve.” Each new stage is formed by splitting up each segment in the preceding stage into 4 connected segments as shown.



- a. Make up a table showing stage numbers and the number of segments in each stage. **See below.**
 b. Write an expression for the number of the segments in stage n . Find the number of segments in the 6th stage. **4^n ; 4096**

18.a.

Stage number	1	2	3
Number of segments	4	16	64