

Practice 14

FOR USE WITH SECTION 3.1

Write each expression as a power of 2.

- | | | | |
|------------------------|-------------------|------------------|------------------------------|
| 1. $2 \cdot 2 \cdot 2$ | 2. $2^3 \cdot 4$ | 3. $8 \cdot 32$ | 4. $2^5 \cdot 2$ |
| 5. $2^7 \cdot 2^6$ | 6. $16 \cdot 2^5$ | 7. $2^7 \cdot 8$ | 8. $2^4 \cdot 2^4 \cdot 2^4$ |

Evaluate each expression when $x = 4$.

- | | | | |
|--------------|----------------|---------------------------------------|---------------------------------------|
| 9. $12(2^x)$ | 10. $150(2^x)$ | 11. $3280 \left(\frac{1}{2}\right)^x$ | 12. $1024 \left(\frac{1}{2}\right)^x$ |
|--------------|----------------|---------------------------------------|---------------------------------------|

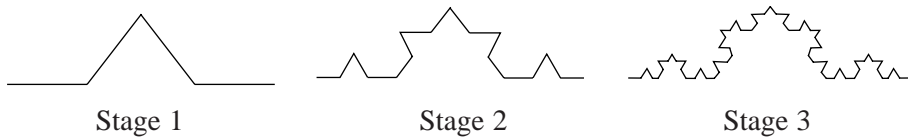
Tell whether each equation represents growth that is *linear*, *exponential*, or *neither*.

- | | | | |
|------------------------|-------------------------|-------------------------|----------------|
| 13. $y = \frac{1}{3x}$ | 14. $y = \frac{2^x}{5}$ | 15. $y = \frac{x}{2^5}$ | 16. $y = 6x^2$ |
|------------------------|-------------------------|-------------------------|----------------|

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.

- How many different symbols can be stored in a *byte*, which is 8 bits?
- 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.)

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.



- Make up a table showing stage numbers and the number of segments in each stage.
- Write an expression for the number of the segments in stage n . Find the number of segments in the 6th stage.