Practice 1.3.4: Interpreting Complicated Expressions A

For problems 1–4, use what you know about expressions to answer the questions.

1. Is the expression $\frac{5 + 3x}{2}$ always equal to the expression $4x$? Explain your answer.

2. What values of x make the expression $(2x + 1)(x - 3)$ positive?

3. Is the expression $2 \cdot 4^x$ equal to the expression 8^x? Explain your answer.

4. Is the expression $(5 \cdot 2)^x$ equal to the expression 10^x? Explain your answer.

For problems 5 and 6, determine whether each expression is a quadratic expression. Explain your reasoning.

5. $(x + 4)(5x - 11)$

6. $(2x^2 + 9)(x - 2)$

continued

For problems 7–10, translate any verbal expressions into algebraic expressions, and then answer the questions.

7. A transfer station charges \$15 for a waste disposal permit and an additional \$5 for each cubic yard of garbage it disposes of. This relationship can be described using the expression $15 + 5x$. What effect, if any, does changing the value of x have on the cost of the permit?

8. A bank account balance for an account with an initial deposit of P dollars earns interest at an annual rate of r. The amount of money in the account after n years is described using the following expression: $P(1 + r)^n$. What effect, if any, does decreasing the value of r have on the amount of money after n years?

9. A tire can hold C cubic feet of air. It loses a percentage of its air during each period of time, t. This rate of loss, written as a decimal, is r. This situation can be described using the following formula: $C(1 - r)^t$. What effect, if any, does increasing the value of r have on the value of C?

10. The surface area of a cube is the product of 6 and the square of the side length. How does the surface area of a cube change when the side of a cube doubles in length?