Setting the four linear factors equal to zero and solving for x yields:

$$\begin{array}{cccc} x+2=0 & x-2=0 & x+3=0 & x-3=0 \\ x=-2 & x=2 & x=-3 & x=3 \end{array}$$

This gives us $\{\pm 2, \pm 3\}$ as the solution set of the equation.

3.R.7 Exercises

Concept Check

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

1. You should always start by checking the number of terms when factoring a polynomial.

2. If a trinomial is to be factored, the trial-and-error or *ac*-methods can be used.

3. If there are four terms in a polynomial, it cannot be factored.

Practice

Completely factor each of the given polynomials. If a polynomial cannot be factored, write "not factorable."

4. $x^2 - 100$

5. $x^2 + 10x + 25$

6. $x^2 + 16x + 64$

7. $20x^2 - 21x - 54$

8. $2y^2 + 6yz + 5y + 15z$

9. $x^3 + 125$

10. $a^2 + 2a + 24$

11. $x^2 + 9x - 36$

12. $64 + 49t^2$

13. $4x^2 - 14x + 6$

14. $200x + 20x^2 - 4x^3$