We then set each factor equal to zero and solve for t.

$$\begin{aligned} 4t - 13 &= 0 & 4t + 13 &= 0 \\ 4t &= 13 & 4t &= -13 \\ t &= \frac{13}{4} = 3.5 & t &= \frac{-13}{4} = -3.5 \end{aligned}$$

Since time in this instance cannot be negative, the correct answer is $t = 3.5$ seconds. It took the rock 3.5 seconds to fall 196 feet to the bottom of the cliff.

3.R.6 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. A trinomial is factorable if the middle term is the difference of the inner and outer products of two binomials.

2. The trial-and-error method of factoring a trinomial follows the same steps as the FOIL method of multiplication.

3. The first step in the *ac*-method of factoring is to rewrite the middle term.

4. Factoring can be checked by multiplying the factors and verifying that the product matches the original polynomial.

Practice

Completely factor each polynomial. If a polynomial cannot be factored, write "not factorable."

5. $6x^2 + 11x + 5$

6. $-x^2 + 3x - 2$

7. $x^2 + 8x + 64$

8. $9x^2 - 3x - 20$

9. $12x^2 - 38x + 20$

10. $5a^2 - 7a + 2$

Writing & Thinking

11. It is true that $2x^2 + 10x + 12 = (2x + 6)(x + 2) = (2x + 4)(x + 3)$. Explain how the trinomial can be factored in two ways. Is there some kind of error?

12. It is true that $5x^2 - 5x - 30 = (5x - 15)(x + 2)$. Explain why this is not the completely factored form of the trinomial.