Section 9.1
Square Root Property

The standard form of a quadratic equation is $ax^2 + bx + c = 0$, where $a$, $b$, and $c$ are real numbers, with $a \neq 0$.
A quadratic equation is a second-degree equation, that is, an equation with a squared term and no terms of higher degree.

Zero-Factor Property
If two numbers have a product of 0, then at least one of the numbers must be 0. If $ab = 0$, then $a = 0$ or $b = 0$

Use the zero-factor property to solve each equation.

$5x^2 = 11x - 2$
Square Root Property
If \( x \) and \( k \) are complex numbers and \( x^2 = k \), then
\[ x = \sqrt{k} \quad \text{or} \quad x = -\sqrt{k}. \]

If \( k \neq 0 \), then using the square root property always produces two square roots, one positive and one negative.

Use the square root property to solve each equation.

\[ z^2 = 225 \]
\[ k^2 = 19 \]
\[ x^2 = 54 \]
\[ 5z^2 - 200 = 0 \]
Solving a Quadratic Equation by Completing the square

Solve each equation by completing the square.

\[ m^2 - 4m - 32 = 0 \]
\[ t^2 + 2t - 1 = 0 \]

\[ 25n^2 - 20n = 1 \]

Find all complex solutions of each equation.

\[ x^2 = -18 \]

\[ (4m - 7)^2 = -27 \]