

## Solving Equations with Complex Roots (ALG.CN.12)

Solve each equation by factoring.

- $x^2 + 36 = 0$       $x = \pm 6i$
- $3x^2 - 375 = 0$       $x = \pm 5\sqrt{5}$
- $5x^2 = -80$       $x = \pm 4i$
- $3x^3 = -135x$       $x = 0, \pm 3\sqrt{5}i$
- $49x^2 + 16 = 0$       $x = \pm \frac{4}{7}i$
- $363x^2 + 3 = 0$       $x = \pm \frac{1}{11}i$
- $\sqrt{7}x^4 + \sqrt{175}x^2 = 0$       $x = 0, \pm\sqrt{5}i$
- $x^4 - 81 = 0$       $x = \pm 3, \pm 3i$

Use the quadratic formula to solve each equation.

- $x^2 - 4x + 13 = 0$       $x = 2 - 3i, 2 + 3i$
- $x^2 + 10x + 26 = 0$       $x = -5 - i, -5 + i$
- $x^2 + 22x + 125 = 0$       $x = -11 - 2i, -11 + 2i$
- $x^2 - 14x + 69 = 0$       $x = 7 - 2\sqrt{5}i, 7 + 2\sqrt{5}i$
- $x^2 + 2\sqrt{2}x + 7 = 0$       $x = -\sqrt{2} - \sqrt{5}i, -\sqrt{2} + \sqrt{5}i$
- $x^2 - 2\sqrt{6}x + 26 = 0$       $x = \sqrt{6} - 2\sqrt{5}i, \sqrt{6} + 2\sqrt{5}i$
- $9x^2 + 12x + 7 = 0$       $x = -\frac{2}{3} - \frac{\sqrt{3}}{3}i, -\frac{2}{3} + \frac{\sqrt{3}}{3}i$
- $4x^2 - 28x + 58 = 0$       $x = \frac{7}{2} - \frac{3}{2}i, \frac{7}{2} + \frac{3}{2}i$
- $x^2 - 2ax + (a^2 + b^2) = 0$       $x = a + bi, a - bi$
- $x^2 + 2\sqrt{3}x + (4y^2 + 3) = 0$       $x = -\sqrt{3} + 2yi, -\sqrt{3} - 2yi$