12.3 – Finding Complex Solutions

- Rewrite the equation in the form $ax^2 = c$.
- Isolate x^2.
- Find square roots using $\sqrt{-1} = i$.

Examples:

1. $5x^2 + 180 = 0$

$5x^2 = -180$

$x^2 = -36$

$x = \pm 6i$

$\sqrt{-36} = \sqrt{-1 \cdot 36} = 6i$

2. $4x^2 + 25 = 0$

$4x^2 = -25$

$x^2 = \frac{-25}{4}$

$x = \pm \frac{5}{2} i$

$\sqrt{\frac{-25}{4}} = \sqrt{-1 \cdot \frac{25}{4}} = \frac{5}{2} i$

3. $3x^2 = -24$

$x^2 = -8$

$x = \pm 2i\sqrt{2}$

$\sqrt{-8} = \sqrt{-1 \cdot 8} = 2i\sqrt{2}$

4. $x^2 + 5 = 0$

$x^2 = -5$

$x = \pm i\sqrt{5}$

$\sqrt{-5} = \sqrt{-1 \cdot 5} = i\sqrt{5}$