10.4 Solving by Taking Square Roots

Goal: Students will solve for a quadratic with ONLY X^2 by isolating the square and taking the square root of both sides.

Example 1: Solve $x^2 = 484$ $\sqrt{x^2} = \sqrt{484}$ $\boxed{x = \pm 22}$	Steps: 1. Isolate the SQUARE 2. Take the square root of both sides 3. Solve for x
Example 2: Solve $5x^2 + 4 = 129$ $5x^2 = 125$ $x^2 = 25$ $\sqrt{x^2} = \sqrt{25}$ $\boxed{x = \pm 5}$	Steps: 1. Isolate the SQUARE by subtracting 4 and dividing both sides by 5 2. Take the square root of both sides 3. Solve for x
Example 3: Solve $(x-3)^2 = 144$ $\sqrt{(x-3)^2} = \sqrt{144}$ $x-3 = \pm 12$ $x-3=12$ $\quad$ $x-3=-12$ $\boxed{x=15}$ $\quad$ $\boxed{x=-9}$	Steps: 1. Isolate the SQUARE 2. Take the square root of both sides 3. Solve for x
Example 4: Solve $(2x-3)^2 = 144$ $\sqrt{(2x-3)^2} = \sqrt{144}$ $2x-3 = \pm 12$ $2x-3=12$ $\quad$ $2x-3=-12$ $2x=15$ $\quad$ $2x=-9$ $\boxed{x=\frac{15}{2}}$ $\quad$ $\boxed{x=-\frac{9}{2}}$	Steps: 1. Isolate the SQUARE 2. Take the square root of both sides 3. Solve for x