Using Square Roots to Solve Equations

June 5

Steps:
1. Isolate the term with the x^2
2. Isolate the x^2
3. Take square roots on both sides
4. Simplify answers

Solve for x:

1 $7x^2 + 8 = 3x^2 + 80$

$-3x^2 - 8 \quad -3x^2 - 8$

$4x^2 = 72$

$\sqrt{x^2} = \sqrt{18} = \sqrt{9}\sqrt{2}$

$x = \pm 3\sqrt{2}$

or $3\sqrt{2}, -3\sqrt{2}$

2 $\frac{\cancel{4}}{\cancel{3}}\left(\frac{\cancel{3}x^2}{\cancel{4}}\right) = (81)\frac{4}{3}$

$\sqrt{x^2} = \sqrt{108}$

$x = \pm 6\sqrt{3}$

$4 \cdot 27$

$\sqrt{4}\sqrt{9}\sqrt{3}$

$2 \cdot 3\sqrt{3}$

3 $4(x+6)^2 = 36$

$\frac{4(x+6)^2}{4} = \frac{36}{4}$

$\sqrt{(x+6)^2} = \sqrt{9}$

$x+6 = \pm 3$

$x = -6 \pm 3$

$-6+3 = \boxed{-3}$

$-6-3 = \boxed{-9}$

4 $(3x-4)^2 - 25 = 0$

$\sqrt{(3x-4)^2} = \sqrt{25}$

$3x-4 = \pm 5$

$\frac{3x}{3} = \frac{4 \pm 5}{3}$

$x = \frac{4+5}{3}, \frac{4-5}{3}$

$x = 3, -1/3$