

Welcome to class

- Cell phones in holder.

Warm-up at desk

Solve the following by factoring

$$x^2 - 16 = 20$$

$$x^2 - 36 = 0$$

$$(x+6)(x-6) = 0$$

$$x = -6$$
$$x = 6$$

Solving
Quadratic
Equations
Using Square
Roots

1. Isolate the variable or expression being squared (get it by itself)

2. Square root both sides of the equation (include + and - on the right side!)

3. This means you have 2 equations to solve!!

4. Solve for the variable (make sure there are no roots in the denominator)

<p>1.) $x^2 = 25$</p> $\sqrt{x^2} = \sqrt{25}$ $x = \pm 5$ $\begin{aligned} (-5)(-5) &= 25 \\ (5)(5) &= 25 \end{aligned}$	<p>2.) $3x^2 = 81$</p> $\frac{3x^2}{3} = \frac{81}{3}$ $x^2 = 27$ $\sqrt{x^2} = \sqrt{27}$ $x = \pm 3\sqrt{3}$ <div style="text-align: right;"> $\begin{array}{r} 27 \\ 3 \overline{) 27} \\ \underline{3 } \\ 0 \end{array}$ </div>
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<p>3.) $4x^2 - 1 = 0$</p> $\frac{4x^2}{4} = \frac{1}{4}$ $\sqrt{x^2} = \sqrt{\frac{1}{4}}$ $\sqrt{x^2} = \frac{\sqrt{1}}{\sqrt{4}}$ $x = \pm \frac{1}{2}$	<p>4.) $\frac{m^2}{15} - 3 = 2$</p> $15 \cdot \frac{m^2}{15} = 5 \cdot 15$ $\sqrt{m^2} = \sqrt{75}$ $m = \pm 5\sqrt{3}$
<p>5.) $(2y + 3)^2 = 49$</p> $\sqrt{(2y+3)^2} = \sqrt{49}$ $2y+3 = \pm 7$ $\frac{2y+3}{-3} = \frac{7}{-3} \quad \frac{2y+3}{-3} = \frac{-7}{-3}$ $2y = 4 \quad 2y = -10$ $y = 2 \quad y = -5$	<p>6.) $3(x-2)^2 - 6 = 14$</p> $\frac{3(x-2)^2}{3} = \frac{40}{3}$ $\sqrt{(x-2)^2} = \sqrt{\frac{40}{3}}$ $x-2 = \pm \sqrt{\frac{40}{3}}$ $x = 2 \pm \sqrt{\frac{40}{3}}$

75
3 25
5 5

$\frac{\sqrt{40}}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}}$

$2 \pm \frac{\sqrt{120}}{3}$

$2 \sqrt{\frac{120}{3}}$

$x = \frac{6 \pm 2\sqrt{30}}{3}$

$x = 2 \pm \frac{2\sqrt{30}}{3}$