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Worksheet - Zero Product Property Worksheet

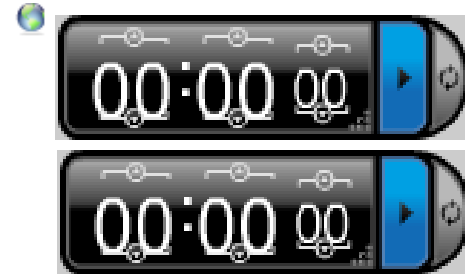


Bell Work

Directions: Please graph the following quadratic equation using an xy chart. Show your writing for each value of x that you plug in.

Date: _____

<http://www.mathvizza.com>

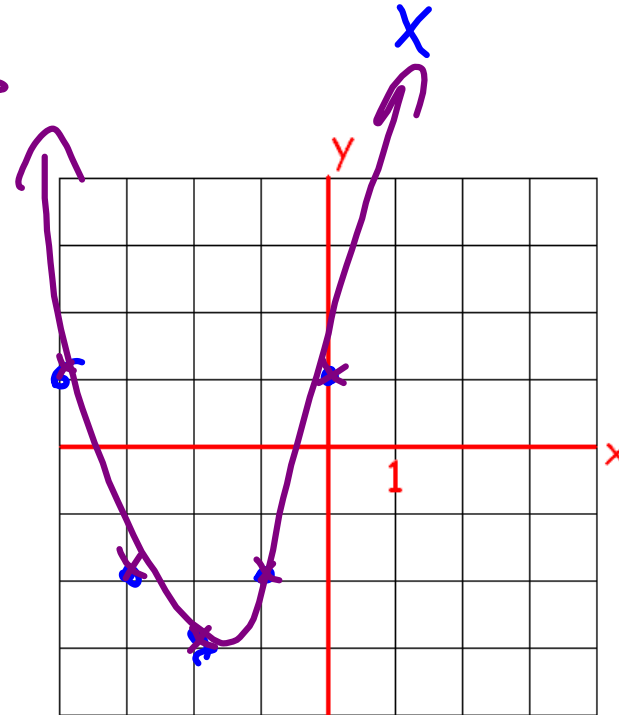


lakenTimer2.swf

$$y = (x + 2)^2 - 3$$

Handwritten annotations: a purple arrow points from the '2' in the binomial to the 'x', and another purple arrow points from the '-3' to the constant term.

x	y
0	6
1	1
2	-2
3	-3
4	-2
5	1
6	6



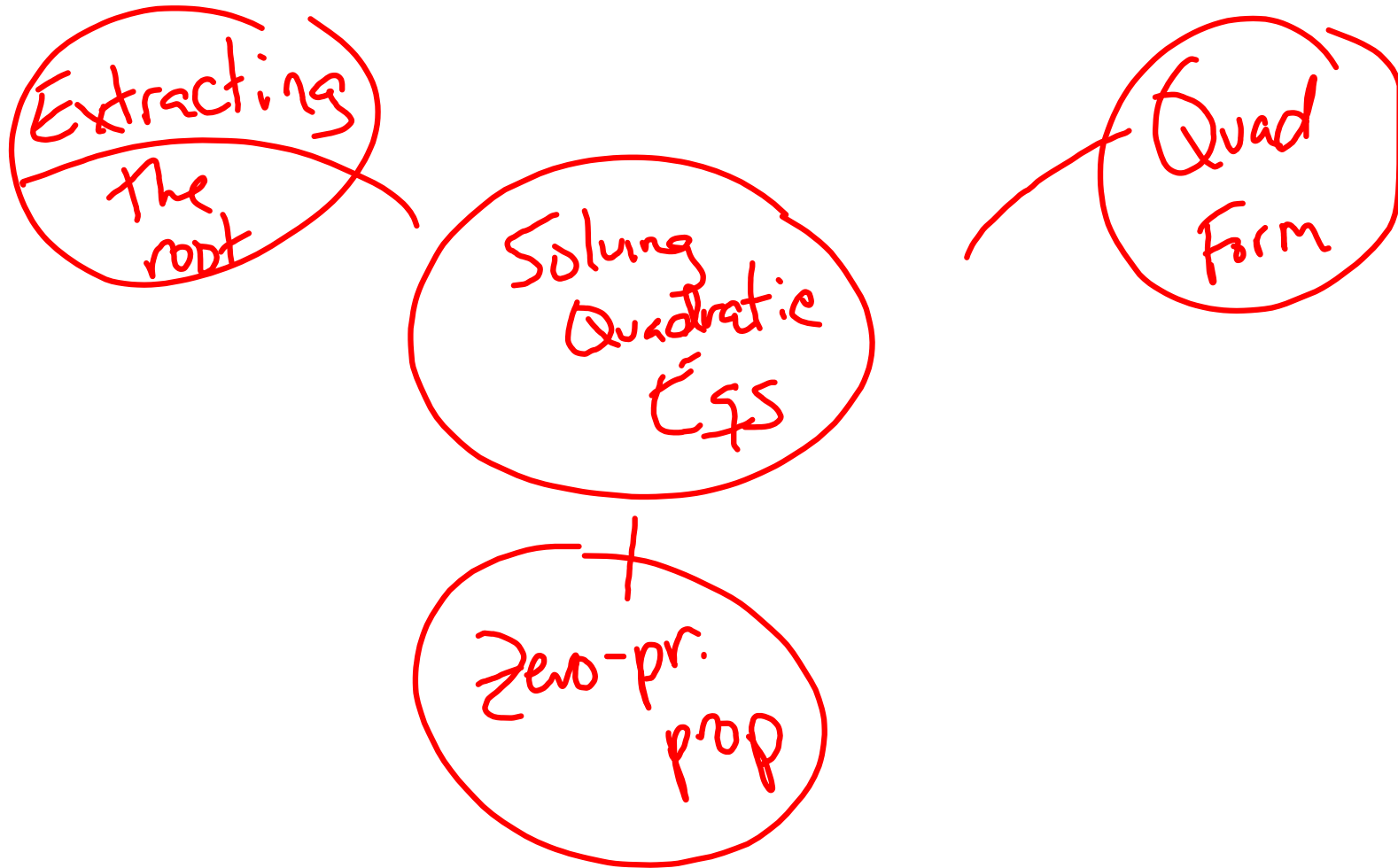
$$f(x) = -x^2$$

$2 \cdot 3 = 6$

$$-(3x-)(2x-4)$$

Objectives

1. The students will solve quadratic equations using the zero product property.



Zero Product Property

Given any equation of the form $ab=0$, we know that $a=0$ or $b=0$

1. $4x=0$

$4 \neq 0$ $x=0$

2. $xy=0$

$x=0$ $y=0$

3. $x(x+1)=0$

$x=0$ $x+1=0$
 x

4. $(2x-1)(3x+5)=0$

$2x-1=0$ $3x+5=0$
 $2x=1$ $3x=-5$
 $x=1/2$ $x=-5/3$

Steps

0. Make sure the equation is set equal to zero.
1. Factor the quadratic expression.
2. Split the problem using the zero product property.
3. Solve each equation.

1. $x^2 = 3x$
 $-3x -3x$

$$x^2 - 3x = 0$$

$$x(x-3) = 0$$

$$x = 0 \quad x - 3 = 0$$
$$x = 3$$

2. $3x^2 = 9x$

$$3x^2 - 9x = 0$$

$$3x(x-3) = 0$$

$$3x = 0 \quad x - 3 = 0$$

$$x = 0 \quad x = 3$$

3. $(2x-9)(x-1) = 0$

$$2x - 9 = 0 \quad x - 1 = 0$$

$$2x = 9 \quad x = 1$$
$$x = 9/2 \text{ or } x = 1$$

4. $-x^2 - 4x - 3 = 0$

$$\begin{array}{r} -x^2 - 4x - 3 = 0 \\ \hline -1 \quad -1 \end{array}$$
$$x^2 + 4x + 3 = 0$$

$$(x+1)(x+3) = 0$$

$$x+1 = 0 \quad x+3 = 0$$

$$x = -1 \quad x = -3$$

$$-3x - 3x$$

$$x^2 - 3x = 0$$

$$x(x-3) = 0$$

$$x=0 \quad x-3=0$$
$$x=3$$

3.

$$2x-9=0 \quad x-1=0$$

$$2x=9 \quad x=1$$
$$x=9/2 \text{ or } x=1$$

$$3x^2 - 9x = 0$$

$$3x(x-3) = 0$$

$$3x=0 \quad x-3=0$$

$$x=0 \quad x=3$$

4.

$$\frac{-1 \pm \sqrt{1}}{2}$$

$$x^2 + 4x + 3 = 0$$

$$(x+1)(x+3) = 0$$

$$x+1=0 \quad x+3=0$$