

4.5 QUADRATIC EQUATIONS

ZERO FACTOR PROPERTY:

IF $ab = 0$, THEN $a = 0$ OR $b = 0$.

Ex: IF $(x+2)(x-4) = 0$,

THEN $x+2 = 0$ OR $x-4 = 0$

$x = -2$ OR $x = 4$

Ex: SOLVE $x^2 - 5x + 6 = 0$

$(x-2)(x-3) = 0$

$x = 2, 3$

Ex: $4x^2 - 4x = 15$

$4x^2 - 4x - 15 = 0$

$$\begin{array}{r} -60 \\ -10 \end{array} \begin{array}{r} 2 \\ 2 \end{array} \begin{array}{r} -5 \\ 3 \end{array}$$

$$\begin{array}{r} 6 \\ -4 \end{array}$$

$(2x+3)(2x-5) = 0$

$x = -\frac{3}{2}, \frac{5}{2}$

SOLVE BY TAKING SQUARE ROOTS

EX: SOLVE $x^2 = 4$

$$\sqrt{x^2} = \sqrt{4}$$

$$x = \pm 2$$

NOTE: $x^2 = 4$

$$x^2 - 4 = 0$$

$$(x-2)(x+2) = 0$$

$$x = 2, -2$$

EX: SOLVE $4x^2 - 8 = 0$

$$4x^2 = 8$$

$$x^2 = 2$$

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

SOLVE BY GRAPHING

EX: SOLVE $x^2 - x - 2 = 0$

$$\frac{-b}{2a} = \frac{-(-1)}{2(1)} = \frac{1}{2}$$

x	y
-1	0
$\frac{1}{2}$	- $\frac{9}{4}$
2	0

SOLUTIONS

$$x = -1, 2$$

