

Simplifying square roots:

$-\sqrt{18}$

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$-\sqrt{\frac{7x^3}{25x}}$

$\sqrt{200}$

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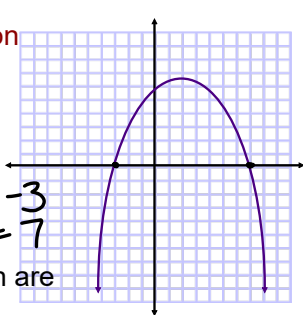
Section 4-5
Quadratic Equations

Students will be able to:

- solve quadratic equations by factoring
- solve quadratic equations by graphing

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The **zeros of a function** are where the graph intersects the x-axis.



$f(x) = 0$

$x = -3$
 $x = 7$

The zeros of a function are also called roots.

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Zero Product Property:

if $ab = 0$, then $a = 0$ or $b = 0$

Solve:

$-10x^2 + 6x - 40 = 0$

$(x+10)(x-4) = 0$

$x+10=0$ $x-4=0$

$-10-10$ $+4+4$

$x = -10$ $x = 4$

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Solve:

$x^2 + 5x = 0$

$x(x+5) = 0$

$x=0$ $x=-5$

$x^2 - 7x = -12$

$+12+12$

$x^2 - 7x + 12 = 0$

$(x-3)(x-4) = 0$

$x = 3, 4$

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Solve by factoring:

$2x^2 = 8x$

$2x^2 - 8x = 0$

$2x(x-4) = 0$

$x=0, 4$

$6x^2 + 13x + 6 = 0$

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

$3x+2=0$ $2x+3=0$

$-2-2$ $-3-3$

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

Nov 8-1:53 PM

Solve by graphing:

$$6x^2 = -19x - 15$$

$$6x^2 + 19x + 15 = 0$$

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

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

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The function $y = -0.03x^2 + 1.60x$ models the path of a kicked soccer ball. The height is y , the distance is x , and both are in meters.

a) How far does the ball travel?
53.3 m

b) How high does the ball go?
21.3 m

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Solve:

$$\begin{cases} y = x^2 - 2 \\ y = 3x^2 - 4x - 2 \end{cases}$$

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

$$-x^2 + 2 = -x^2 + 4x - 2$$

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

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

$$x = 0, 2$$

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You can also use the roots to find a possible quadratic model.

What quadratic function could be modeled by the zeros of a function at -5 and 8?

$$x = -5, 8$$

$$0 = (x+5)(x-8)$$

$$0 = x^2 - 3x - 40$$

$$y = x^2 - 3x - 40$$

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Hwk:
pg. 229 - 231 #10 - 16 evens,
28, 34, 36, 40, 41, 48, 50, 54,
55, 59, 61, 62, 68, 70

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