

signs different
↓

$$x^2 + 7x - 18 = 0$$

$$\frac{-2}{-2} * \frac{9}{9} = -18$$

$$\frac{-2}{-2} + \frac{9}{9} = 7$$

$$\begin{array}{r} 18 \\ 6 \cdot 3 \\ 2 \cdot 9 \\ 1 \cdot 18 \end{array}$$

$$(x-2)(x+9) = 0$$

$$\begin{array}{cc} x-2=0 & x+9=0 \\ +2 & +2 \\ +2 & -9 \\ -9 & -9 \end{array}$$

$x=2$	$x=-9$
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$$\frac{2x^2}{2} - \frac{162}{2} = 0$$

$$2(x^2 - 81) = 0$$

perfect square perfect square

Difference of Squares

$$2(x^2 - 81) = 0$$

$\sqrt{x^2}$ ↓ ↓ $\sqrt{81}$

$$2(x+9)(x-9) = 0$$

$$\begin{array}{cc} x+9=0 & x-9=0 \\ -9 & -9 \\ -9 & +9 \\ +9 & +9 \end{array}$$

$x=-9$	$x=9$
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$$2x^2 - 162 = 0$$

+162 +162

$$\frac{2x^2}{2} = \frac{162}{2}$$

$$\sqrt{x^2} = \sqrt{81}$$

$$x = \pm 9$$

$$(9)(9) = 81$$

$$(-9)(-9) = 81$$

$$7x^2 - 105 = 0$$

+105 +105

$$\frac{7x^2}{7} = \frac{105}{7}$$

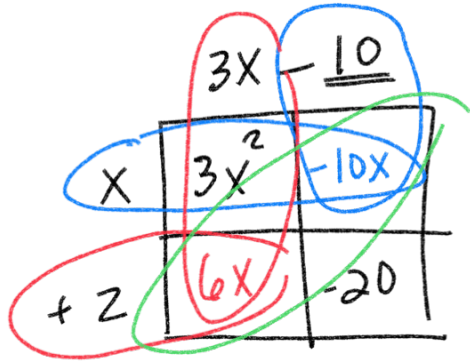
$$\sqrt{x^2} = \sqrt{15}$$

$$x = \pm \sqrt{15}$$

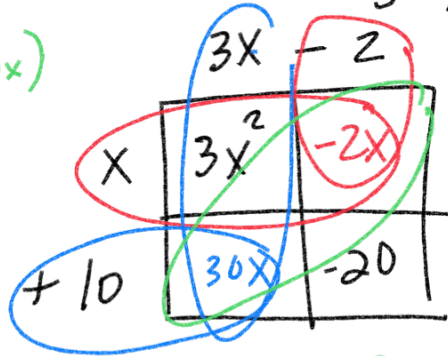
$$x = \sqrt{15}, -\sqrt{15}$$

$$3x^2 + 11x - 20 = 0$$

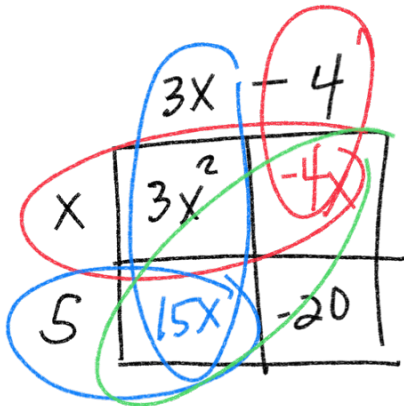
different signs



$$6x + (-10x) = -4x$$



$$30x + (-2x) = 28x$$



$$15x - 4x = 11x$$

$$(3x-4)(x+5) = 0$$

$$3x - 4 = 0$$

$$+4 \quad +4$$

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

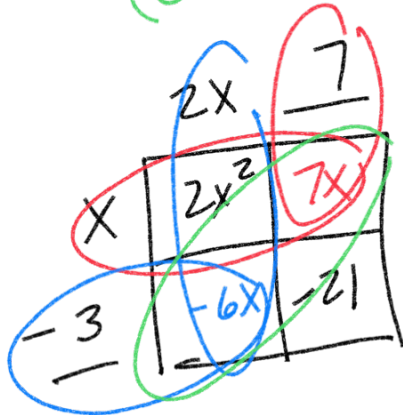
$$x = \frac{4}{3}$$

$$x + 5 = 0$$

$$-5 \quad -5$$

$$x = -5$$

$$2x^2 + x - 21 = 0$$



$$7x - 6x = x$$

$$\frac{2}{1 \cdot 2} \quad \frac{21}{3 \cdot 7}$$

$$1 \cdot 2 \quad 1 \cdot 21$$

$$(2x+7)(x-3) = 0$$

$$2x + 7 = 0$$

$$-7 \quad -7$$

$$\frac{2x}{2} = \frac{-7}{2}$$

$$x = -\frac{7}{2}$$

$$x - 3 = 0$$

$$+3 \quad +3$$

$$x = 3$$

Quadratic Formula

→ Find the "roots"
x-intercepts

$$ax^2 + bx + c = 0$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\begin{array}{ccc} a & b & c \\ \downarrow & \downarrow & \downarrow \\ 2x^2 + 1x - 21 = 0 \end{array}$$

$$\begin{aligned} a &= 2 \\ b &= 1 \\ c &= -21 \end{aligned}$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{-1 \pm \sqrt{1^2 - 4(2)(-21)}}{2(2)}$$

$$\frac{-1 \pm \sqrt{1 + 168}}{4} = \frac{-1 \pm \sqrt{169}}{4}$$

$$\frac{-1 \pm 13}{4} = \frac{-1 + 13}{4} \quad \frac{-1 - 13}{4}$$

$$\frac{12}{4} \quad \frac{-14}{4}$$

$$\boxed{3 \quad -\frac{7}{2}}$$

$$\square x^2 - 4x - 12 = 0$$

$$a = 1$$

$$b = -4$$

$$c = -12$$

Quadratic formula

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-12)}}{2(1)}$$

$$\frac{4 \pm \sqrt{16 + 48}}{2} = \frac{4 \pm \sqrt{64}}{2}$$

$$\frac{4 + \sqrt{64}}{2}$$

$$\frac{4 - \sqrt{64}}{2}$$

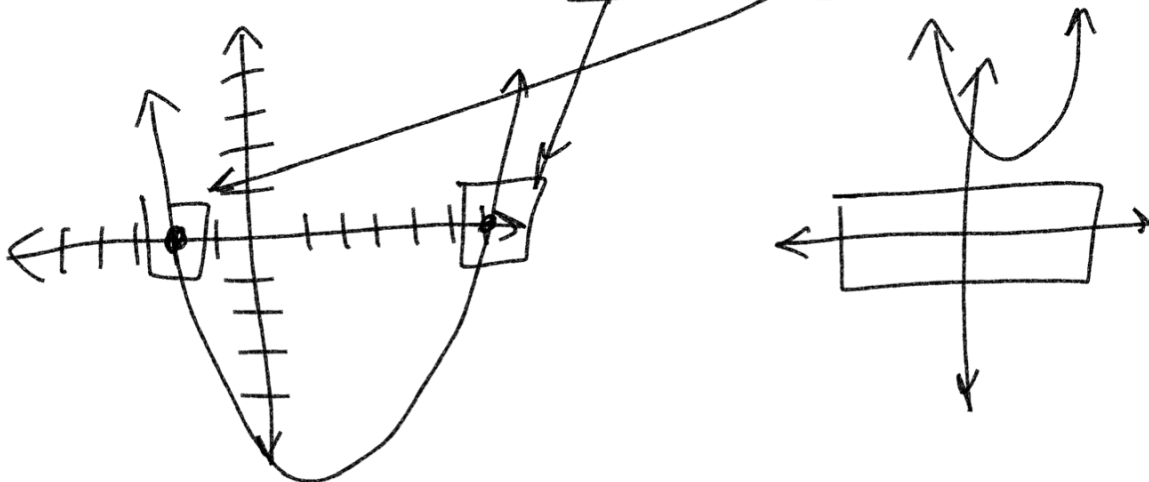
$$\frac{4 + 8}{2}$$

$$\frac{4 - 8}{2}$$

$$\frac{12}{2}$$

$$\frac{-4}{2}$$

6	-2
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$$5x^2 - 2x + 10 = 3 \quad \leftarrow \text{must be zero in order to use quadratic formula}$$

-3 -3

$$5x^2 - 2x + 7 = 0$$

$$a = 5$$

$$b = -2$$

$$c = 7$$

$$\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\frac{-(-2) \pm \sqrt{(-2)^2 - 4(5)(7)}}{2(5)}$$

$$\frac{2 \pm \sqrt{4 - 140}}{10}$$

$$\frac{2 \pm \sqrt{-136}}{10}$$

$\sqrt{-}$
imaginary number

$$\frac{2 \pm i\sqrt{136}}{10}$$

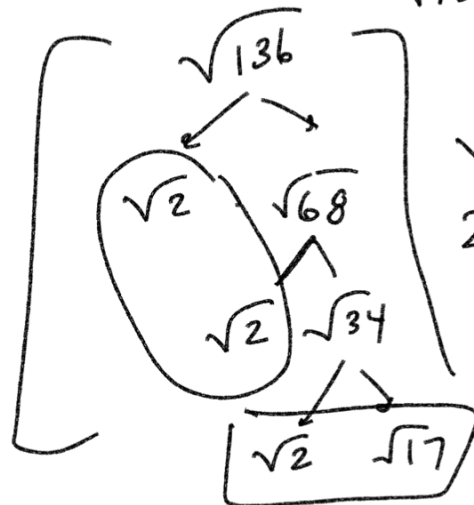
$$\sqrt{-136} = \sqrt{136} \sqrt{-1}$$

$$\sqrt{-1} = i$$

$$\sqrt{136} i$$

$$\frac{\frac{2}{2} \pm \frac{2i\sqrt{34}}{2}}{\frac{10}{2}}$$

$$\frac{1 \pm i\sqrt{34}}{5}$$



$$\sqrt{136} = 2\sqrt{34}$$

$$\frac{1 + i\sqrt{34}}{5}$$

$$\frac{1 - i\sqrt{34}}{5}$$

HW
Ch 5.8 evens
Supplemental WS
HW 24
Quiz 24 } due April 8th
HW/quiz 23 due March 26th