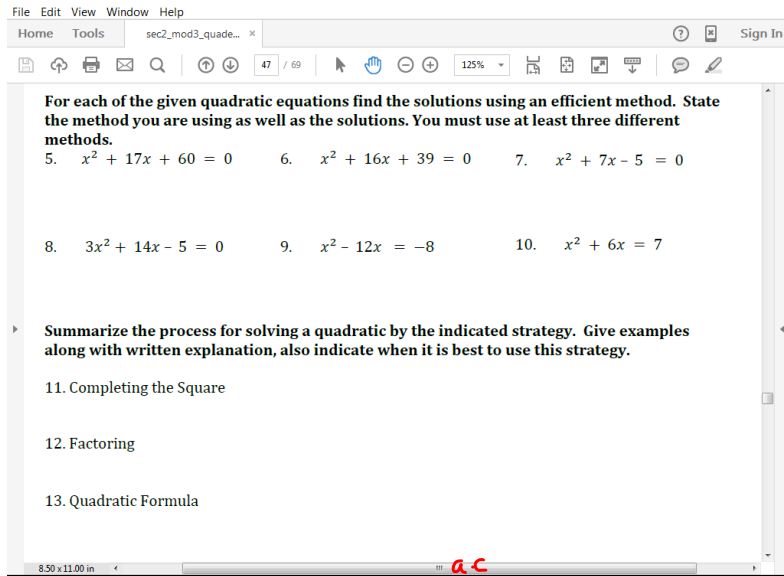


Starter

Get out your 3.7 packet and make sure #5-15 on pg.47-48 are finished. We will go over questions shortly and turn in 3.7 today.



⑧ $3x^2 + 14x - 5 = 0$

$(3x^2 + 15x) - (x - 5) = 0$

$\begin{matrix} 15 \\ \times & -1 \\ \hline 14 \end{matrix}$

$3x(x+5) - 1(x+5) = 0$

$(x+5)(3x-1) = 0$

$x+5=0$
 $x = -5$

$3x-1=0$
 $\frac{3x}{3} = \frac{1}{3}$
 $x = \frac{1}{3}$

$x = -5, \frac{1}{3}$

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

$a=3$
 $b=14$
 $c=-5$

$x = \frac{-14 \pm \sqrt{14^2 - 4 \cdot 3 \cdot (-5)}}{2 \cdot 3}$

$x = \frac{-14 \pm \sqrt{196 + 60}}{6} = \frac{-14 \pm \sqrt{256}}{6}$

$\frac{-14 \pm 16}{6} \rightarrow \frac{-14+16}{6} = \frac{2}{6} = \frac{1}{3}$ and $\frac{-14-16}{6} = \frac{-30}{6} = -5$

$x = \frac{1}{3}, -5$

$y_1 = 3x^2 + 14x - 5$
 $y_2 = 0$
 find the intersection points

$y_1 = 3x^2 + 14x - 5$
 find zeroes

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$x = \frac{-b}{2a}$ Solving Quadratic and Other Equations 3.7

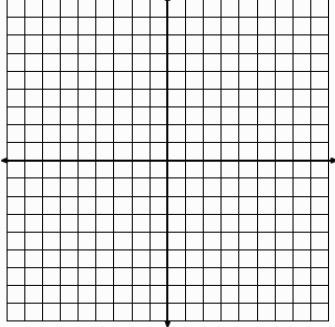
15. $f(x) = x^2 - 4x - 1$

a. Line of symmetry: $x = 2$

b. x-intercepts: $(-0.24, 0)$ & $(4.24, 0)$

c. y-intercept: $(0, -1)$

d. vertex: $(2, -5)$



Solve each system of equations using an algebraic method and check your work!

16. $\begin{cases} 3x + 5y = 15 \\ 3x - 2y = 6 \end{cases}$

17. $\begin{cases} y = -7x + 12 \\ y = 5x - 36 \end{cases}$

8.50 x 11.00 in

$$f(x) = x^2 - 4x - 1$$

$$0 = x^2 - 4x - 1$$

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

$$\begin{array}{r} +4 \\ \hline 5 = (x-2)(x-2) \end{array}$$

$$\begin{array}{r} 5 = (x-2)^2 \\ -5 \qquad \qquad \qquad -5 \\ \hline 0 = (x-2)^2 - 5 \end{array}$$

$$f(x) = (x-2)^2 - 5$$

$$\left(\frac{b}{2}\right)^2 = \left(\frac{-4}{2}\right)^2 = (-2)^2 = 4$$

$$\begin{array}{r} -2 \quad 4 \\ \times \quad -2 \\ \hline -4 \end{array}$$

$$\begin{array}{r} 0 = (x-2)^2 - 5 \\ +5 \qquad \qquad \qquad +5 \\ \hline \sqrt{5} = \sqrt{(x-2)^2} \\ \pm\sqrt{5} = x - 2 \\ +2 \qquad \qquad \qquad +2 \\ \hline 2 \pm \sqrt{5} = x \end{array}$$

$$x = 2 + \sqrt{5} = 4.24$$

$$x = 2 - \sqrt{5} = -0.24$$

$$\boxed{x = -0.24, 4.24}$$

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3. In the figure below, points S , T , and U are the midpoints of the sides of $\triangle PQR$.

Suppose $QR = 40$, $SU = 52$, and $PR = 96$.
Find the following lengths.

$PQ = \underline{104}$
 $PT = \underline{52}$
 $TU = \underline{48}$

4. Draw the image of the following segment after a dilation centered at the origin with a scale factor of $\frac{2}{3}$.

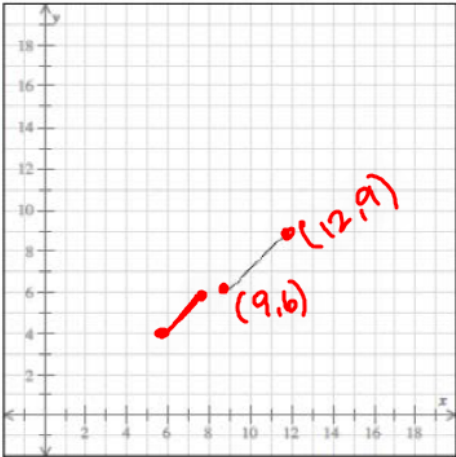
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4. Draw the image of the following segment after a dilation centered at the origin with a scale factor of $\frac{2}{3}$.



Handwritten red notes next to the graph:











$$\begin{aligned} & \left(9 \cdot \frac{2}{3}, 6 \cdot \frac{2}{3}\right) \\ & \left(12 \cdot \frac{2}{3}, 9 \cdot \frac{2}{3}\right) \\ & \rightarrow (6, 4) \\ & (8, 6) \end{aligned}$$

6. Use the given information to prove that $\triangle PQR \sim \triangle PST$.

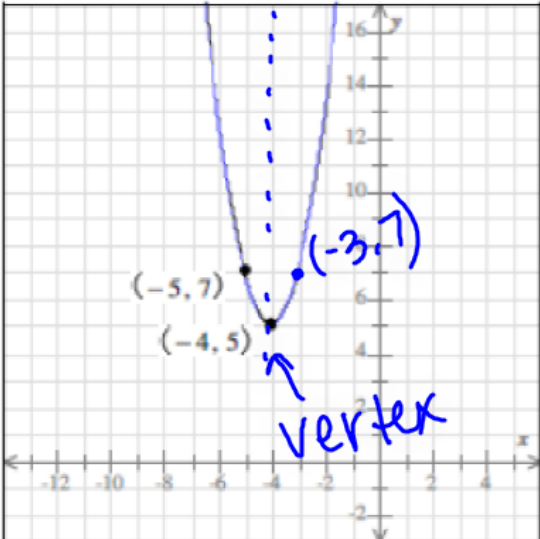
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33. Find the equation of the quadratic function f whose graph is shown below.



$f(x) = 2(x+4)^2 + 5$

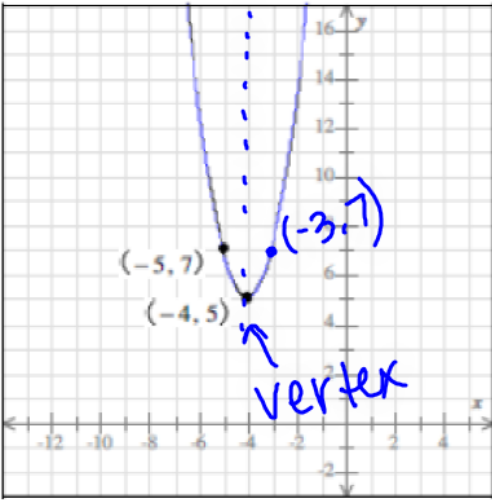
$i = \sqrt{-1}$
 $i^2 = -1$

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33. Find the equation of the quadratic function f whose graph is shown below.



$f(x) = 2(x+4)^2 + 5$

$i = \sqrt{-1}$
 $i^2 = -1$

32. Use the quadratic formula to solve for x .

$$2x^2 + 5x - 1 = 0$$

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What is the larger maximum value?

$i = \sqrt{-1}$
 $i^2 = -1$

44. Multiply

$$\begin{aligned} (-3+6i)(-4+3i) &= (-3)(-4) + (-3)(3i) + (6i)(-4) + (6i)(3i) \\ &= 12 - 9i - 24i + 18i^2 \\ &= 12 - 33i + 18(-1) \\ &= 12 - 33i - 18 \\ &= -6 - 33i \end{aligned}$$

$a + bi$

$\frac{-2 \pm \sqrt{72}}{2}$

8.50 x 11.00 in

$$\begin{aligned} \sqrt{-72} &= \sqrt{-1 \cdot 72} = \sqrt{-1} \cdot \sqrt{72} = i\sqrt{72} \\ &= i\sqrt{2^2 \cdot 2 \cdot 3^2} = i\sqrt{2^2} \cdot \sqrt{2} \cdot \sqrt{3^2} \\ &= i \cdot 2 \cdot \sqrt{2} \cdot 3 = 6i\sqrt{2} \end{aligned}$$

72
^
8 9
^ ^
2 4 3 3
^
2 2
 $2^3 \cdot 3^2$