

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.

Graph the quadratic function and supply the desired information about the graph.

14. $f(x) = x^2 + 8x + 13$

a. Line of symmetry: $x = -4$

b. x-intercepts: $(-5.7, 0)$ & $(-2.3, 0)$

c. y-intercept: $(0, 13)$

d. vertex: $(-4, -3)$

© 2013 MATHEMATICS VISION PROJECT | MVP
 In partnership with the Utah State Office of Education
 Licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported license

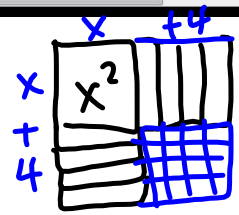
Completing the Square

$f(x) = x^2 + 8x + 13$

$$\begin{array}{r} 0 = x^2 + 8x + 13 \\ -13 \qquad \qquad -13 \\ \hline -13 = x^2 + 8x + \underline{16} \\ +16 \\ \hline 3 = (x+4)(x+4) \end{array}$$

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

$$\left(\frac{8}{2}\right)^2 = 16$$



$$\begin{array}{r} -13 = x^2 + 8x + \underline{16} \\ +16 \\ \hline 3 = (x+4)(x+4) \end{array}$$

$$3 = (x+4)(x+4)$$

$$\begin{array}{r} 3 = (x+4)^2 \\ -3 \qquad \qquad -3 \\ \hline 0 = (x+4)^2 - 3 \end{array}$$

$$0 = (x+4)^2 - 3$$

$$f(x) = (x+4)^2 - 3$$

Vertex: $(-4, -3)$

Home Tools sec2_mod3_quade... x Sign In

47 / 69 125%

Topic: Solving Quadratic Equations Efficiently

For each of the given quadratic equations find the solutions using an efficient method. State the method you are using as well as the solutions. You must use at least three different methods.

5. $x^2 + 17x + 60 = 0$ 6. $x^2 + 16x + 39 = 0$ 7. $x^2 + 7x - 5 = 0$

8. $3x^2 + 14x - 5 = 0$ 9. $x^2 - 12x = -8$ 10. $x^2 + 6x = 7$

Summarize the process for solving a quadratic by the indicated strategy. Give examples along with written explanation, also indicate when it is best to use this strategy.

11. Completing the Square

12. Factoring

13. Quadratic Formula

Quadratic Formula:

$$\textcircled{7} x^2 + 7x - 5 = 0$$

$$\begin{aligned} a &= 1 \\ b &= 7 \\ c &= -5 \end{aligned}$$

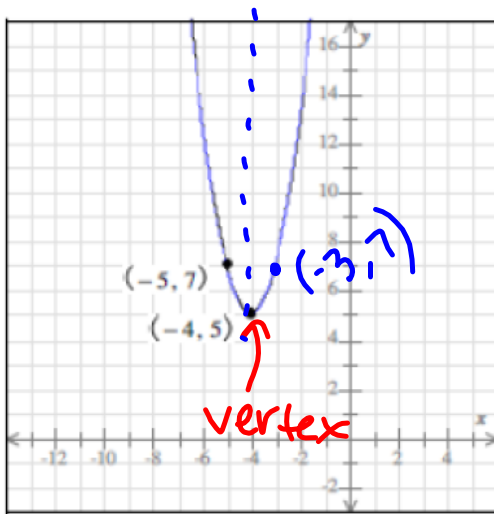
$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-7 \pm \sqrt{7^2 - 4 \cdot 1 \cdot -5}}{2 \cdot 1} = \frac{-7 \pm \sqrt{49 + 20}}{2}$$

$$= \frac{-7 \pm \sqrt{69}}{2} \rightarrow \frac{-7 + \sqrt{69}}{2} = 0.65 \text{ \& } \frac{-7 - \sqrt{69}}{2} = -7.65$$

$$x = -7.65, 0.65$$

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



32. Use the quadratic formula to solve for x .

$$V: (h, k)$$

$$f(x) = a(x-h)^2 + k$$

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

Solve for x -intercepts:

$$0 = 2(x+4)^2 + 5$$

$$\frac{-5}{2} = \frac{2(x+4)^2}{2}$$

$$\sqrt{-\frac{5}{2}} = \sqrt{(x+4)^2}$$

$$\sqrt{-1 \cdot \frac{5}{2}} = x+4$$

$$i\sqrt{1} \cdot \sqrt{\frac{5}{2}} = x+4$$

$$\pm i\sqrt{\frac{5}{2}} = x+4$$

$$\frac{-4 \pm i\sqrt{\frac{5}{2}}}{1} = x$$

$$-4 + i\sqrt{\frac{5}{2}}, -4 - i\sqrt{\frac{5}{2}} = x$$

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

$$i^2 = -1$$

44. Multiply.

$$(-3 + 6i)(-4 + 3i) =$$

$$(-3)(-4) + (-3)(3i) + (6i)(-4) + (6i)(3i) =$$

$$12 + -9i + -24i + 18i^2$$

$$12 - 33i + 18(-1)$$

$$\boxed{-6 - 33i}$$

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

 $a + bi$

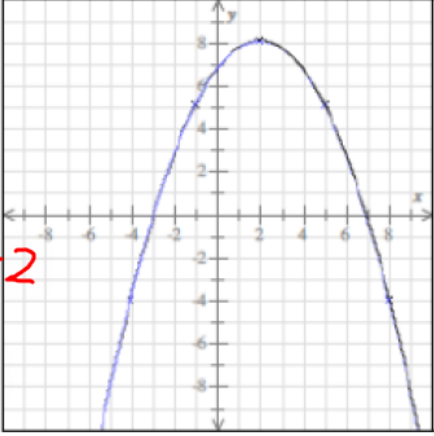
Condensed SAGE Review Questions.pdf - Adobe Acrobat Reader DC

File Edit View Window Help

Home Tools sec2_mod3_quade... Condensed SAGE R... x Sign In

8 / 8 125%

34. Answer the questions below based on the two quadratic functions.

Function 1	Function 2
$x = \frac{-b}{2a}$ vertex: $(-2$ $f(x) = -3x^2 - 12x - 8$ $x = \frac{-(-12)}{2(-3)} = \frac{12}{-6} = -2$ $y = -3(-2)^2 - 12(-2) - 8$	

What is the vertex of Function 1?

What is the vertex of Function 2?

8.50 x 11.00 in