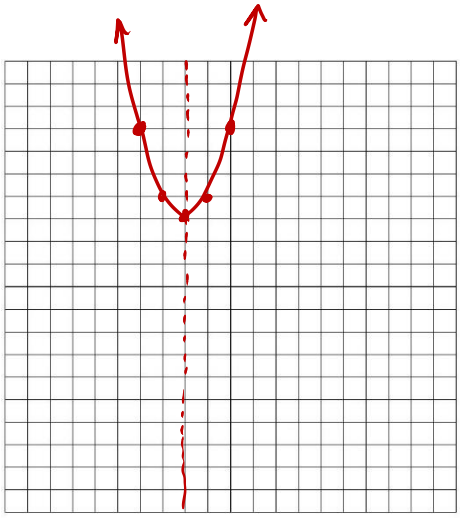
Name: Key

Chapter 5 Review

Graph the quadratic function. Identify the vertex.

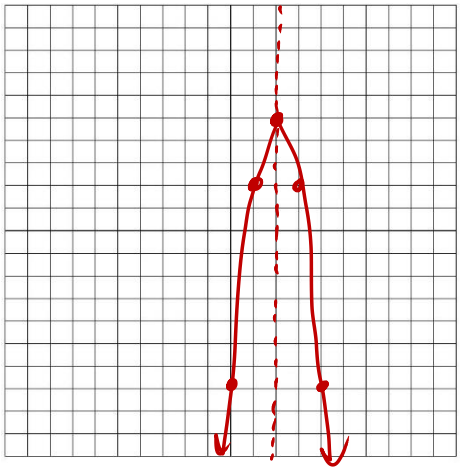
1. $y = x^2 + 4x + 7$



Vertex: $(-2, 3)$

Axis of Symmetry: $x = -2$

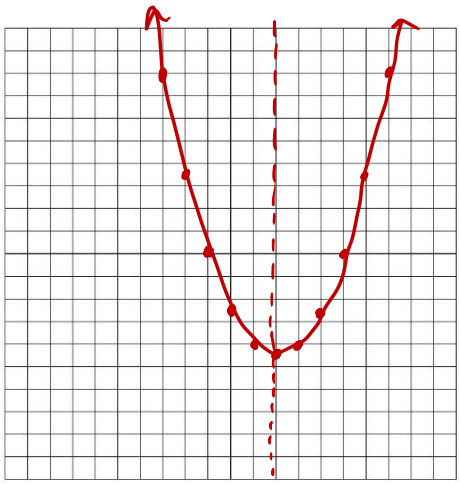
2. $y = -3(x - 2)^2 + 5$



Vertex: $(2, 5)$

Axis of Symmetry: $x = 2$

3. $y = \frac{1}{2}(x + 1)(x - 5)$



Vertex: $(2, -\frac{9}{2})$

Axis of Symmetry: $x = 2$

Factor the expression completely.

4. $x^3 - x^2 - 20x$

$x(x-5)(x+4)$

5. $12x^2 - 25x - 7$

$(4x+1)(3x-7)$

6. $9x^2 + 6x + 1$

$(3x+1)^2$

7. $x^2 - 36$

$(x+6)(x-6)$

Solve the quadratic equation using any appropriate method.

8. $x^2 + 11x + 24 = 0$

$x = -8$ or $x = -3$

9. $x^2 - 8x + 16 = 0$

$x = 4$ or $x = 4$

10. $2x^2 + 1 = -3x$

$x = -\frac{1}{2}$ or $x = -1$

11. $x^2 + 4x = 3$

$x = -2 - \sqrt{7}$ or $x = -2 + \sqrt{7}$

12. $5x^2 - 2 = 13$

$x = \sqrt{3}$ or $x = -\sqrt{3}$

13. $-(x - 1)^2 + 7 = -43$

$x = 1 - 5\sqrt{2}$ or $x = 1 + 5\sqrt{2}$

14. $2x^2 + x - 7 = 0$

$x = \frac{-1 + \sqrt{57}}{4}$ or $x = \frac{-1 - \sqrt{57}}{4}$

15. $6x^2 - 2x + 2 = 4x^2 + x$

$x = \frac{3 + \sqrt{7}i}{4}$ or $x = \frac{3 - \sqrt{7}i}{4}$

Rewrite the expression as a complex number in standard form.
NO CALCULATOR!

16. $(2 - 11i) - (6 - i)$

$-4 - 10i$

17. $(3 + 10i)(4 - 9i)$

$102 + 13i$

18. $(-7 - 9i)^2$

$-32 + 126i$

19. $(4 + 3i) + (-5i)$

$4 - 2i$

CALCULATOR

20. A cliff diver dives off a cliff 50 feet above the water. Write an equation giving the diver's height *h* in feet above the water after *t* seconds. How long does it take for the diver to hit the water? Round your answer to the hundredths place.
Label answer. $h = -16t^2 + h_0$.

$t = \frac{\pm 5\sqrt{2}}{4} \approx 1.77$ seconds

Write the quadratic equation in standard form whose graph passes through the given points.

21. (-5, 1), (-4, -2), (3, 5)

$y = \frac{1}{2}x^2 + \frac{3}{2}x - 4$