Chapter 9 Review Worksheet

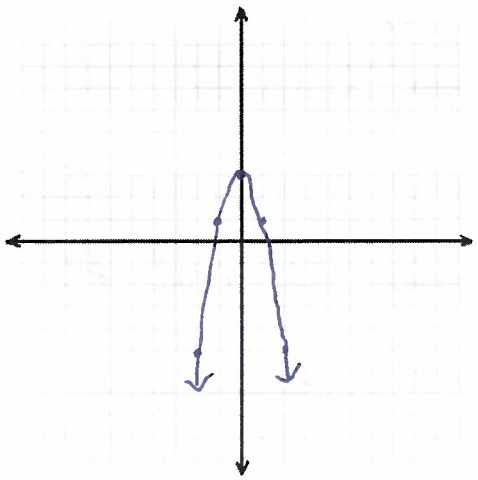
Name: Key

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

Table

x	y
-2	-5
-1	1
0	3
1	1
2	-5

Graph



Vertex: (0, 3)

Equation of Axis of Symmetry: x = 0

Domain: all real #s

Range: $y \leq 3$

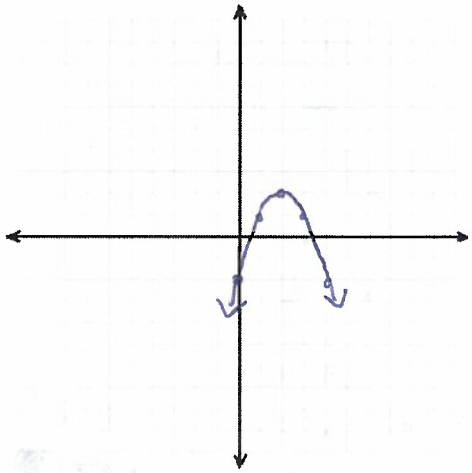
2. $y = -x^2 + 4x - 2$

$\frac{-4}{2(-1)} = 2$ $\quad -4 + 8 - 2$

Table

x	y
0	-2
1	1
2	2
3	1
4	-2

Graph



Vertex: (2, 2)

Equation of Axis of Symmetry: x = 2

Domain: all real #s

Range: $y \leq 2$

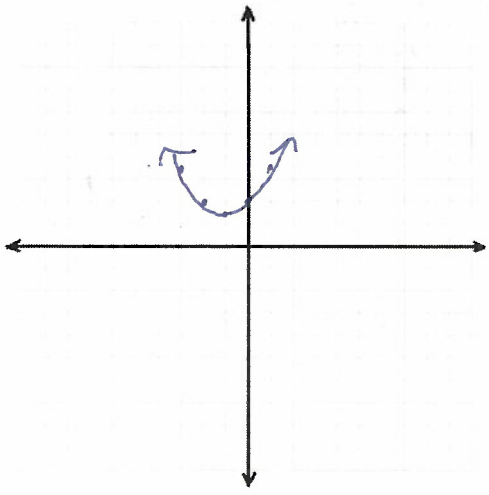
3. $y = \frac{1}{2}x^2 + x + 2$

$\frac{-1}{2(\frac{1}{2})} = -1$ $\quad \frac{1}{2} - 1 + 2$

Table

x	y
-3	3.5
-2	2
-1	1½
0	2
1	3.5

Graph

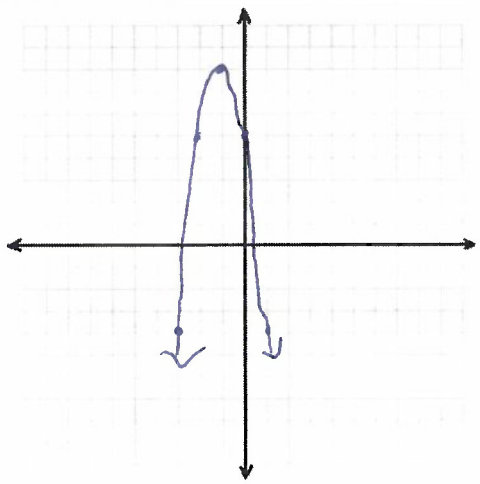


Vertex: (-1, 1½)

Equation of Axis of Symmetry: x = -1

Domain: all real #s

Range: $y \geq 1\frac{1}{2}$

4. $y = -3x^2 - 6x + 5$	Table	Graph
$\frac{6}{2(-3)} = -1$ $\quad -3+6+5$ **Vertex:** $(-1, 8)$ **Equation of Axis of Symmetry:** $x = -1$ **Domain:** all real #s **Range:** $y \leq 8$	x | y -3 | -4 -2 | 5 -1 | 8 0 | 5 1 | -4	

Solve each equation by finding square roots. If the equation has no real number solution, write no solution.

5. $x^2 + 16 = 0$
$-16 \quad -16$
$x^2 = -16$
NO Solution!

6. $\frac{1}{3}x^2 - 3 = 0$
$+3 \quad +3$
$\frac{3}{1} \cdot \frac{1}{3}x^2 = 3 \cdot \frac{3}{1}$
$\sqrt{x^2 = 9}$ $\quad x = \pm 3$

7. $x^2 + 5 = 5$
$-5 \quad -5$
$\sqrt{x^2 = 0}$
$x = 0$

8. $x^2 + 25 = 0$
$-25 \quad -25$
$x^2 = -25$
NO Solution!

9. $\frac{1}{2}x^2 - 3 = -1$
$+3 \quad +3$
$\frac{2}{1} \cdot \frac{1}{2}x^2 = 2 \cdot \frac{2}{1}$
$\sqrt{x^2 = 4}$ $\quad x = \pm 2$

10. $4x^2 = 25$
$\frac{4}{4} \quad \frac{4}{4}$
$\sqrt{x^2 = \frac{25}{4}}$ $\quad x = \pm \frac{5}{2}$

Solve using the zero-product property. Show your work!!

12. $(2x - 10)(3x - 2) = 0$
$2x - 10 = 0$ $\quad 3x - 2 = 0$
$+10 \quad +10$ $\quad +2 \quad +2$
$\frac{2x}{2} = \frac{10}{2}$ $\quad \frac{3x}{3} = \frac{2}{3}$
$x = 5$ or $x = 2/3$

13. $(3x + 9)(2x - 15) = 0$
$3x + 9 = 0$ $\quad 2x - 15 = 0$
$-9 \quad -9$ $\quad +15 \quad +15$
$\frac{3x}{3} = \frac{-9}{3}$ $\quad \frac{2x}{2} = \frac{15}{2}$
$x = -3$ or $x = 7\frac{1}{2}$

14. $2x(5x + 2) = 0$
$\frac{2x}{2} = \frac{0}{2}$ $\quad 5x + 2 = 0$
$-2 \quad -2$
$\frac{5x}{5} = \frac{-2}{5}$
$x = 0$ or $x = -2/5$

Solve by factoring. Show your work!!

15. $x^2 + 7x + 12 = 0$
$(x + 4)(x + 3) = 0$
$x = -4$ or $x = -3$

16. $x^2 - 5x + 4 = 0$
$(x - 4)(x - 1) = 0$
$x = 4$ or $x = 1$

17. $2x^2 + 5x - 3 = 0$
$(2x - 1)(x + 3) = 0$
$x = 1/2$ or $x = -3$

18. $2x^2 - 9x = x^2 - 20$
$-x^2 \quad +20 \quad -x^2 \quad +20$
$x^2 - 9x + 20 = 0$
$(x - 5)(x - 4) = 0$ $\quad x = 5$ or $x = 4$

19. $5x^2 = 10x$
$-10 \quad -10x$
$5x^2 - 10x = 0$
$5x(x - 2) = 0$ $\quad x = 0$ or $x = 2$

20. $x^2 - 49 = 0$
$(x + 7)(x - 7) = 0$
$x = -7$ or $x = 7$