Chapter 9A Review *due on the day of the test.   REMEMBER: NO WORK, NO CREDIT*

- *Review will not be graded unless answers are written on separate paper.*
- *Eligibility to retest: complete accurate review, all homework and missing assignments must be turned in prior to retesting.   Tutoring is required*

1. Tell whether the function is quadratic. Explain.

x	-4	-2	0	2	4
y	21	1	-3	9	37

2. Tell whether the function is quadratic. Explain.

| x	-2	-1	0	1	2
y	-8	-1	0	1	8

3. Tell whether the function $y + 2x^2 = -2$ is quadratic. Explain.

4. Tell whether the graph of the quadratic function $y = 6x^2 + 8x + 3$ opens upward or downward. Explain.

5. Tell whether the graph of the quadratic function $y = -2x^2 - 2x + 3$ opens upward or downward. Explain.

6. A rectangular picture measuring 5 in. by 9 in. is surrounded by a frame with uniform width x. Write a quadratic function in standard form to show the combined area of the picture and frame.

7. Find (1)the axis of symmetry (2)the vertex and (3) the zeros of the parabola $y = -2x^2 - 12x - 16$.
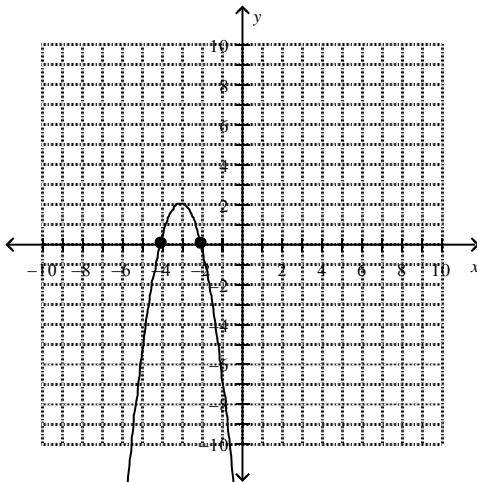
8. Find (1)the axis of symmetry (2)the vertex and (3) the zeros of the parabola $y = 2x^2 - 16x + 30$.
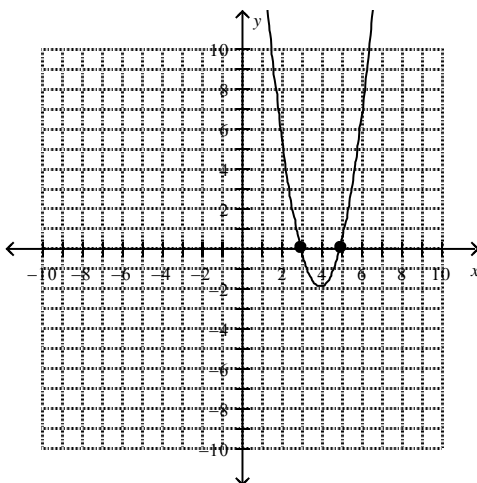
9. Graph $y = -x^2 - 4x - 3$.   Find (1)the axis of symmetry (2)the vertex and (3) the zeros of the parabola.

10. Graph $y = x^2 + 2x - 3$. Find (1)the axis of symmetry (2)the vertex and (3) the zeros of the parabola.

11. The height of a soccer ball that is kicked from the ground can be approximated by the function $y = -16x^2 + 48x$, where y is the height of the soccer ball in feet x seconds after it is kicked. Graph this function. Find the time it takes the soccer ball to reach its maximum height, the soccer ball's maximum height, and the time it takes the soccer ball to return to the ground.

12. The trajectory of a potato launched from a potato cannon on the ground at an angle of 45 degrees with an initial speed of 65 meters per second can be modeled by the parabola: $f(x) = x - 0.0023x^2$, where the x-axis is the ground. Find the height of the highest point of the trajectory and the horizontal distance the potato travels before hitting the ground.

Horizonal Distance (m)
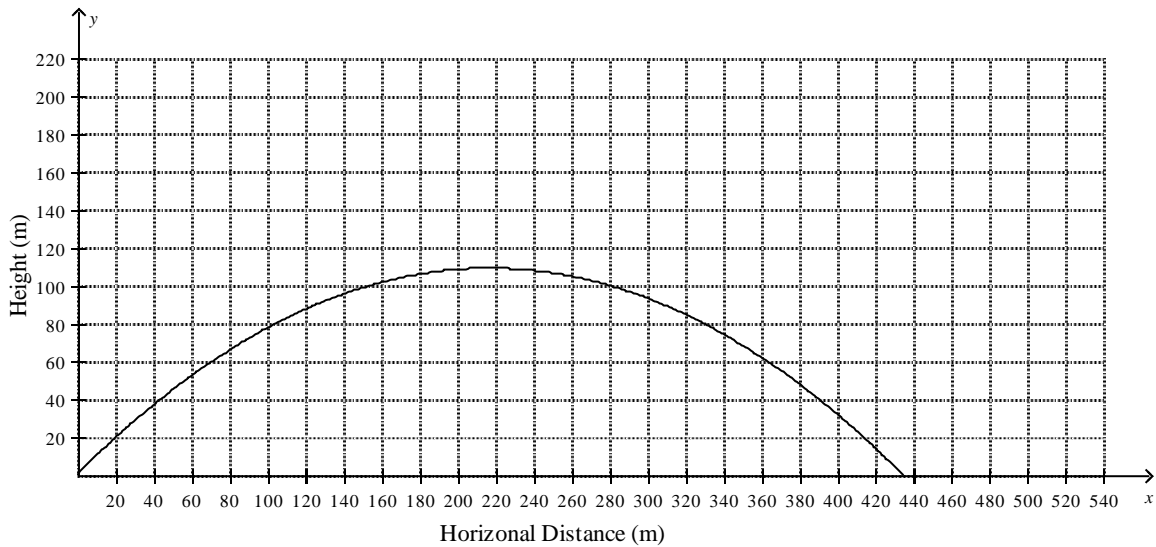
13. The height of a curved support beam can be modeled by $f(x) = -\dfrac{x^2}{300} + 12$. Find the height and width of the beam.

height

width

x.
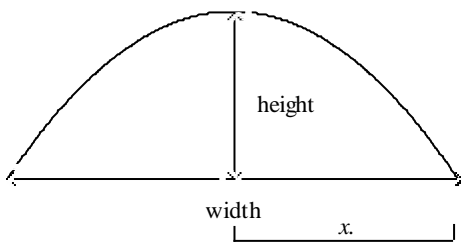
14. Simplify $8 + 3[3 - (1)^6]$.

15. Simplify $3^4 + 12 \div 3 - (1 - 9)$.

16. Simplify by combining like terms. $3x^3 + 9z + 2x^3 + 5z + 6x^2$

17. Solve $n - 8 + n = 1 - 4n$.

18. For $f(x) = -4x + 2$, find $f(x)$ when $x = -1$.

19. Find the x- and y-intercepts of $-x + 2y = 8$.

20. Use intercepts to graph the line described by the equation $3x + 2y = 6$.

21. Find the slope of the line that contains $(1, 6)$ and $(10, -9)$.

22. Tell whether the relation is a direct variation. Explain.

x	−10	−9	1
y	20	18	−2

23. If y varies directly with x, and y is 14 when x is 18, what is the constant of variation and write a direct variation equation to describe this situation.

   ➤ Domain and range notation: when do we use {__,___,___,___} format vs. compound inequality format?
   ➤ How do we graph and inequality? How do you determine the inequality from the graph???
   ➤ What is function notation?

1. ANS:
   Yes, the function is quadratic. The second differences are constant.
2. ANS:
   No, the function is not quadratic. The second differences are not constant.

3. ANS:
   This is a quadratic function because it can be written in standard form as $y = -2x^2 - 2$.

4. ANS:
   Because $a > 0$, the parabola opens upward.
5. ANS:
   Because $a < 0$, the parabola opens downward.
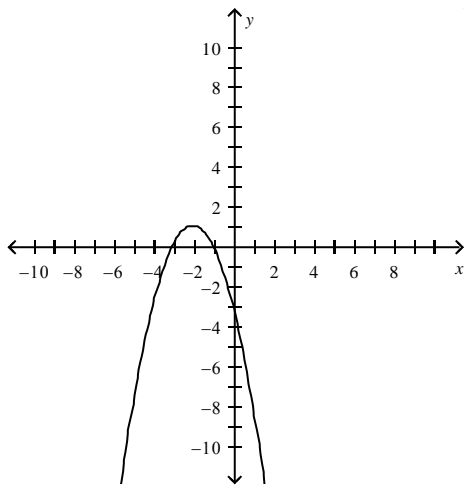
6. ANS:
   $f(x) = 4x^2 + 28x + 45$
7. ANS:

   (–3, 2)

8. ANS:

   (4, –2)

9. ANS:
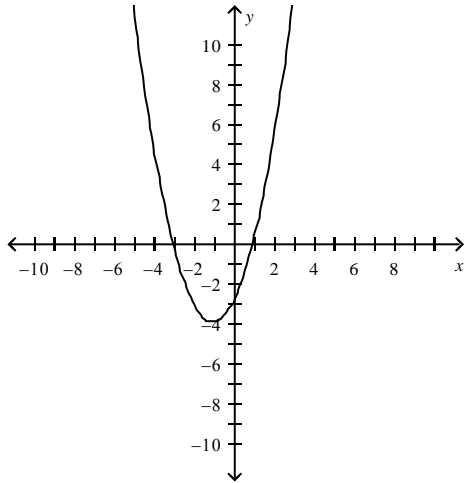
   A.O.S.   x=-2, vertex= (-2, -1),

   zeros {-3, -1}

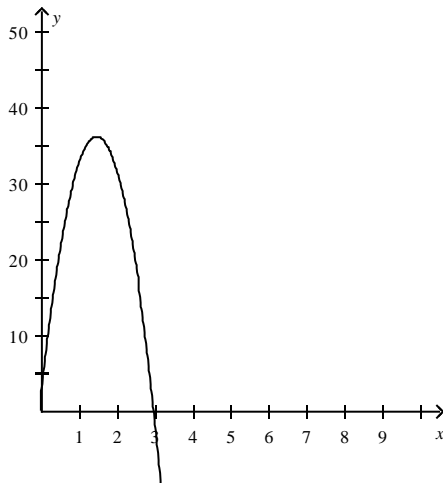10. ANS:

AOS x=-1, vertex (-1, -4),

zeros {-3, 1}

11. ANS:

It takes the ball 1.5 seconds to reach its maximum height. The ball's maximum height is 36 feet. It takes the ball 3 seconds to return to the ground.

12. ANS:
    height: 109 m; distance: 435 m

13. ANS:
    height = 12 units; width = 120 units

14. ANS:
    14

15. ANS:
    93

16. ANS:
    $5x^3 + 14z + 6x^2$

17. ANS:
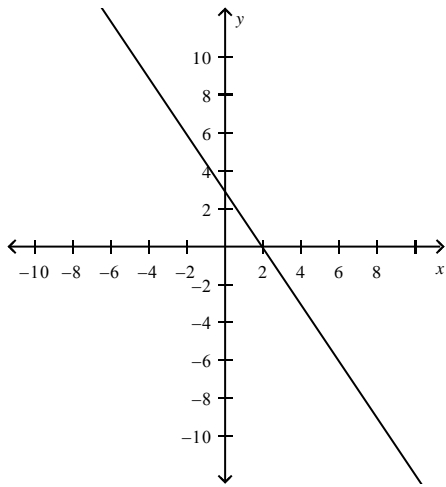 $n = 1\frac{1}{2}$

18. ANS:
    6

19. ANS:
    x-intercept: −8, *y*-intercept: 4

20. ANS:
    x-intercept: 2, *y*-intercept: 3

21. ANS:
    $-\dfrac{5}{3}$

22. ANS:
    This is a direct variation, because it can be written as $y = -2x$, where $k = -2$.

23. ANS:
    $y = \dfrac{7}{9}x$