8.5 I can determine the domain and range of quadratic functions.

State the domain and range for each quadratic

1) $2x^2 - 12x - 10 = 0$

2) $5n^2 + 9n - 12 = 0$

3) $7v^2 - 11v - 7 = 0$

4) $6b^2 - 9b - 15 = 0$

5) $r^2 - 9 = 0$

6) $3m^2 + 10m - 11 = 0$

7) $2n^2 - 6 = 0$

8) $x^2 - 6 = 0$

8.6 I can solve quadratic systems graphically with and without technology.

Solve the quadratic equation.

1) $3k^2 - 7k - 48 = 0$

2) $6a^2 + a - 12 = 0$

3) $2x^2 + 7x - 85 = 0$

4) $6x^2 + 5x - 14 = 0$

Find the zeros of the function

5) $10x^2 + 5x - 4 = 0$

6) $2m^2 + m - 8 = 0$

7) $5n^2 - 80 = 0$

8) $6p^2 - 9p - 1 = 0$

Find the x intercepts of the quadratic function
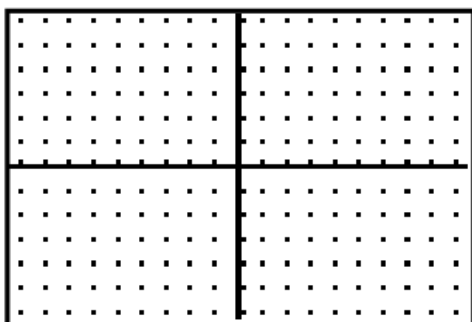
9) $4r^2 - 100 = 0$

10) $b^2 - 2 = 0$

11) $10n^2 - 5n - 8 = 0$
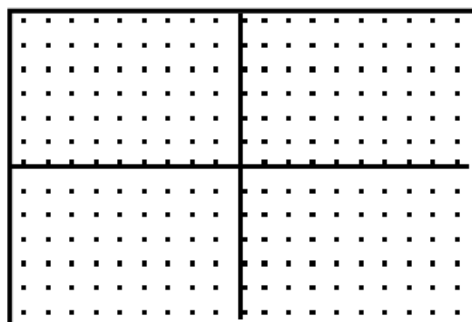
12) $4x^2 + x - 60 = 0$

8.9 I can explain the transformations of quadratic functions.

Identify the transformations to the parent function $y = x^2$ in the following equations. Graph each function
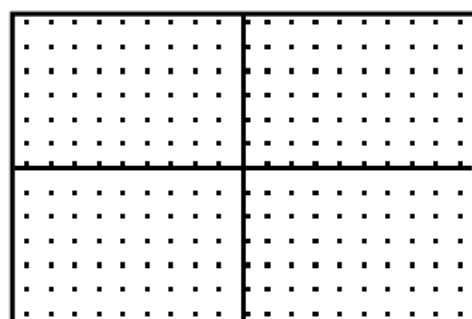
$y = (x+2)^2 - 3$

$y = -(x-1)^2 + 4$

$y = 2(x-3)^2 - 1$

$y = -\dfrac{1}{2}(x+2)^2$

Describe the graph of each function in terms of transformations on the graph of y=x^2

a) $y = 2(x+3)^2$

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

c) $g(x) = 4(x+2)^2 - 8$

d) $h(x) = -3(x-1)^2 - 1$

8.8 I can use transformations to draw the graph of quadratic functions.

The graph of $f(x) = x^2$ has been stretched vertically by a factor of 10 and translated 5 units to the right and 8 units down.

a) Write the equation of the graph resulting from the transformations.

b) Sketch the graph of $f(x) = x^2$ and its image after the transformations.
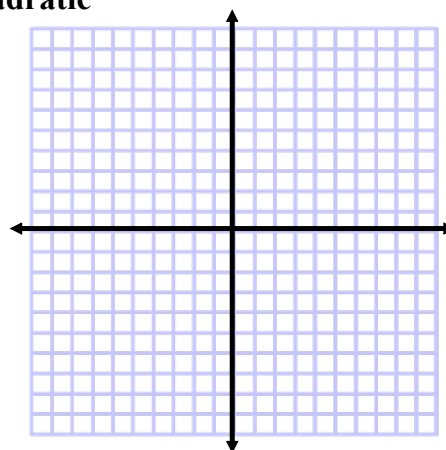
Example 4: Use the description to write a transformed quadratic function in vertex form.

a) The parent function $f(x) = x^2$ is vertically stretched by a factor of 4/3 and then translated 2 units right and 5 units down

b) The parent function $f(x) = x^2$ is reflected across the x-axis and translated 5 units left and 1 unit up to create g.

8.10 I can determine a quadratic function that fits a graph.

Find a quadratic model for the set of values.

1. $(-2, -20), (0, -4), (4, -20)$

2.

x	-2	0	4
$f(x)$	1	-3	85

3. Find a quadratic function to model the values in the table. Predict the value of y for $x = 6$.

x	y
-1	2
0	-2
3	10

Find a quadratic model for the set of values.

1. $(-2, 2), (0, 4), (4, -40)$

2.

x	-2	0	4
$f(x)$	-24	-4	-36

3. Find a quadratic function to model the values in the table. Predict the value of y for $x = 7$.

x	y
-1	2
0	2
3	-34

8.11 I can graph and analyze real-world problems involving quadratics.

A manufacturer determines that the number of drills it can sell is given by the formula
$D = -3p^2 + 180p - 285$, where p is the price of the drills in dollars.
a. At what price will the manufacturer sell the maximum number of drills?
b. What is the maximum number of drills that can be sold?

Dalco Manufacturing estimates that its weekly profit, P, in hundreds of dollars, can be approximated by the formula $P = -3x^2 + 6x + 10$, where x is the number of units produced per week, in thousands.
a. How many units should the company produce per week to earn the maximum profit?
b. Find the maximum weekly profit.

The function $y = -16t^2 + 486$ models the height y in feet of a stone t seconds after it is dropped from the edge of a vertical cliff. How long will it take the stone to hit the ground? Round to the nearest hundredth of a second.
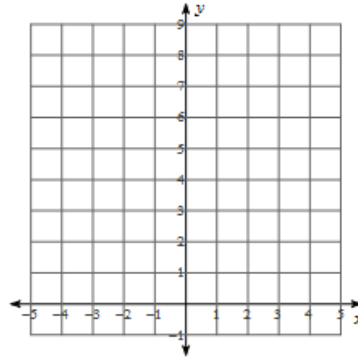
8.12 I can graph quadratic inequalities with and without technology
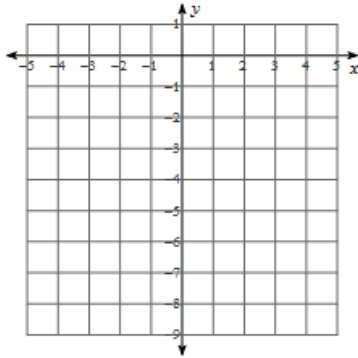
Sketch the graph of each function.

1) $y \leq -\dfrac{1}{3}x^2$
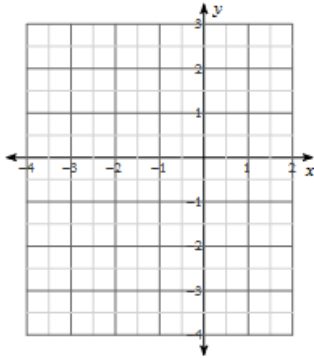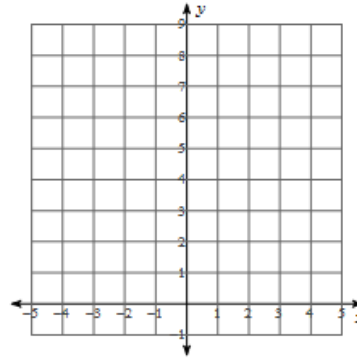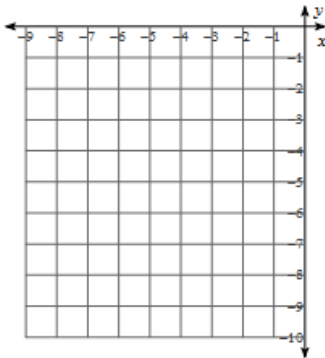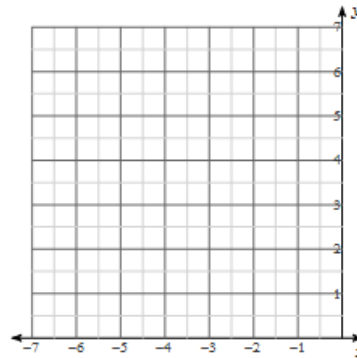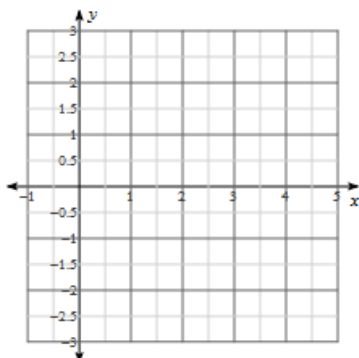
2) $y \leq 2x^2$

3) $y \geq -2x^2$

4) $y < 2x^2$

5) $y > -2x^2 - 16x - 33$

6) $y > x^2 + 8x + 18$

7) $y < \dfrac{1}{2}(x-2)^2 - 1$

8) $y \leq 2(x-4)^2 - 3$