Name:_____

1. Use the quadratic formula to solve y = 2x² − 12x +8.

2. Solve the following by factoring:

   a. $y = 3x^2 + 14x - 5$

   b. $6x^2 + 14x = x - 6$
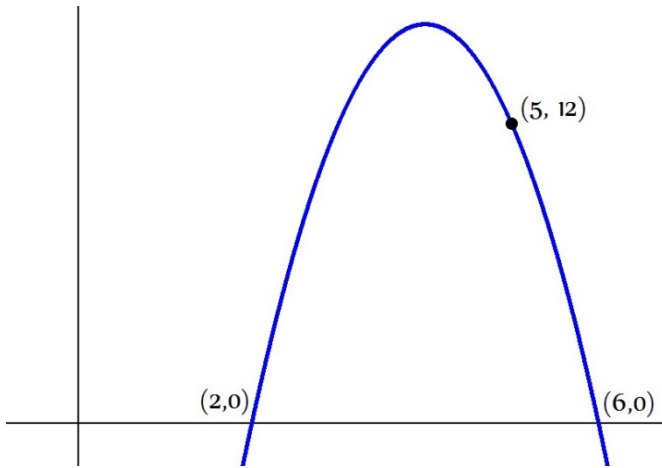
3. Describe the transformations using function notation

X	f(x)
2	6
3	4
4	6
5	12
6	22
7	36

X	g(x)
-8	16
-7	6
-6	0
-5	-2
-4	0
-3	6

4. The figure shown is the graph of a quadratic function in the *xy*-plane.

Of all the points (*x, y*) on the graph, what is the maximum value?

(5, 12)

(2,0)   (6,0)

5. Find the vertex of the parabola with the following equation: y = 2(x + 1)(x − 5).
   Write the equation of the parabola in vertex form.

6. Given a parabola with roots of (-3, 0) and (7, 0) that also passes through the point (2, 100), write the equation of the quadratic in standard form. (y = ax² + bx +c)
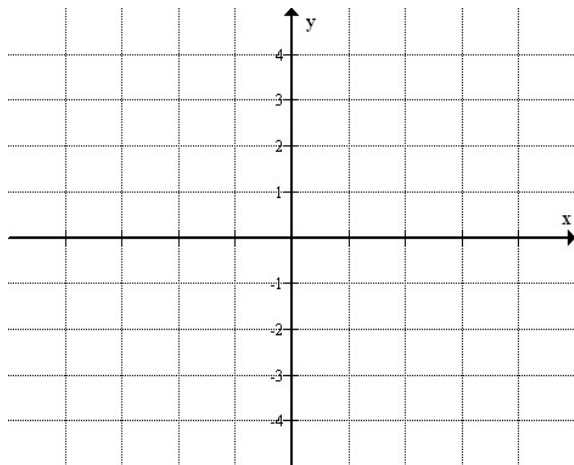
7. Describe the transformations from $f(x) = x^2$ to the following equations:

   a) $j(x) = (2(x - 3))^2$ b) $k(x) = (-x)^2 + 7$

8. Simplify (3- 2i)(3 + 2i)(5 − 2i).

9. Find the area of the region bounded by the given system of inequalities.

$$y \geq 2x - 1$$

$$y \geq -x + 2$$

$$y \leq 5$$

10. You need to buy filing cabinets. You know that Cabinet X costs $10 per unit and requires six square feet of floor space. Cabinet Y costs $20 per unit and requires eight square feet of floor space. You have been given $140 for this purchase, though you don't have to spend that much. The office has room for no more than 72 square feet of cabinets. Write a system of inequalities to represent this situation.

11. Given critical points (0, 0), (40, 0), (20, 40), and (0, 50) with points arranged (k, w), how many of each suit should be made to maximize profit if a tailoring shop makes $34 profit on each knit suit and $31 profit on each wool suit?

12. Use systems to write a quadratic equation that goes through the following points

(2, 30) , (-1, -12) and (0, -4).

13. Given the graph below, write the equation of the quadratic in all 3 forms.
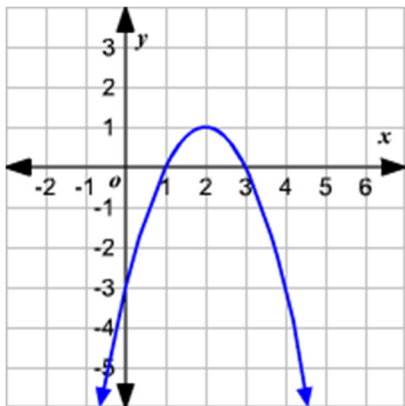
14. Solve the equation using the quadratic formula. Write your answer in simplest form.

$2x^2 - 3x + 8 = 0$