

This worksheet is homework. Please keep it with your homework for any homework checks.

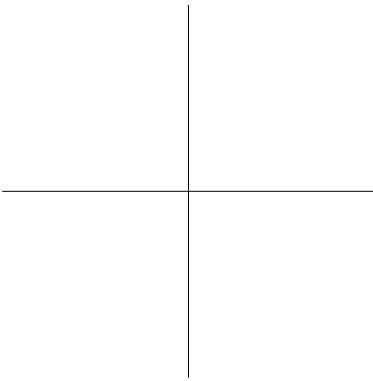
Given three points that are not on a line, there is only one parabola  $y = ax^2 + bx + c$  that will go through those points. To determine this parabola

- Substitute all three points  $(x, y)$  into the equation  $y = ax^2 + bx + c$  to obtain a system of three equations for three unknowns ( $a, b$ , and  $c$ ).
- Solve the system to determine  $a, b$ , and  $c$ .
- Write the equation of the parabola.

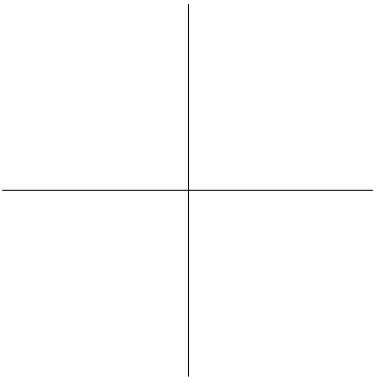
For each of the following problems,

(a). Graph the points. (b). Use the steps to find the equation for the parabola. (c). Find the vertex and graph the parabola.

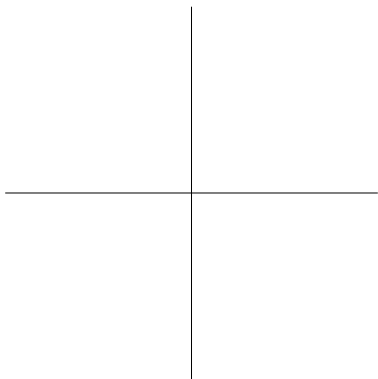
1.  $(1, 0)$ ,  $(2, 3)$ ,  $(-1, 0)$



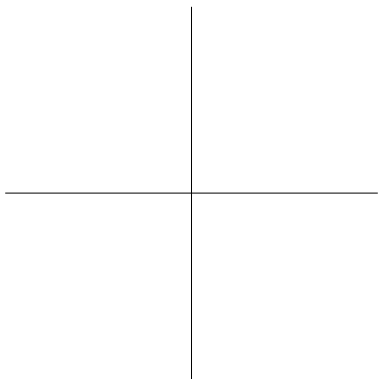
2.  $(3, 2)$ ,  $(2, 5)$ ,  $(1, 4)$



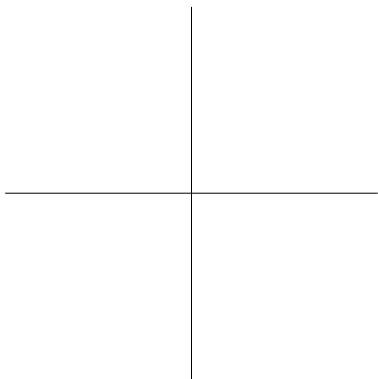
3. (1, 3), (0, 3), (2, 5)



4. (3, 1), (2, 2), (0, 3)



5. (7, 4), (-2, 1), (1, 9)



1.  $y = x^2 - 1$

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

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

4.  $y = -\frac{1}{6}x^2 - \frac{1}{6}x + 3$

5.  $y = -\frac{7}{18}x^2 + \frac{41}{18}x + \frac{64}{9}$