

1.

## Solution

To find the vertex, we look at the coefficients in the function  $t(p) = ap^2 + bp + c$  in this equation,  $a = 3$  and  $b = 6$

The first coordinate of the vertex has the formula:  $\frac{-b}{2a}$  now, plugging into formula to get:

$$\frac{-b}{2a} = -\frac{6}{2(3)} = -1$$

The second coordinate of the vertex is  $t(-1) = 3(-1)^2 + 6(-1) - 6$   
 $= -9$

Therefore, the vertex of the graph of  $f$  is  $(-1, -9)$