

6.

Solution

To find the vertex, we look at the coefficients in the function $u(x) = ax^2 + bx + c$ in this equation, $a = 3$ and $b = 8$

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

$$\frac{-b}{2a} = -\frac{8}{2(3)} = -\frac{4}{3}$$

$$\begin{aligned}\text{The second coordinate of the vertex is } u\left(-\frac{4}{3}\right) &= 3\left(-\frac{4}{3}\right)^2 + 8\left(-\frac{4}{3}\right) - 3 \\ &= -\frac{25}{3}\end{aligned}$$

Therefore, the vertex of the graph of f is $\left(-\frac{4}{3}, -\frac{25}{3}\right)$