## 5.

## Solution

To find the vertex, we look at the coefficients in the function $y(u) = au^2 + bu + c$
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:

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

The second coordinate of the vertex is $y(-\frac{4}{3}) = 3(-\frac{4}{3})^2 + 8(-\frac{4}{3}) - 3$

$= -\frac{25}{3}$

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