4.

Solution

To find the vertex, we look at the coefficients in the function $j(y)=ay^2+by+c$
in this equation, $a=3$ and $b=2$
The first coordinate of the vertex has the formula: $\frac{-b}{2a}$ now, plugging into formula to get:
$\frac{-b}{2a}=-\frac{2}{2(3)}=-\frac{1}{3}$
The second coordinate of the vertex is $j(-\frac{1}{3}) = 3(-\frac{1}{3})^2+2(-\frac{1}{3})-3$
$=-\frac{10}{3}$
Therefore, the vertex of the graph of f is $(-\frac{1}{3},-\frac{10}{3})$