1.

Solution

To find the vertex, we look at the coefficients in the function $j(w)=aw^2+bw+c$
in this equation, $a=2$ and $b=6$
The first coordinate of the vertex has the formula: $\frac{-b}{2a}$ now, plugging into formula to get:
$\frac{-b}{2a}=-\frac{6}{2(2)}=-\frac{3}{2}$
The second coordinate of the vertex is $j(-\frac{3}{2}) = 2(-\frac{3}{2})^2+6(-\frac{3}{2})-3$
$=-\frac{15}{2}$
Therefore, the vertex of the graph of f is $(-\frac{3}{2},-\frac{15}{2})$