3.

Solution

To find the vertex, we look at the coefficients in the function $x(w) = aw^2 + bw + c$

in this equation, $a = 2$ and $b = 3$

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

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

The second coordinate of the vertex is $x\left(-\frac{3}{4}\right) = 2\left(-\frac{3}{4}\right)^2 + 3\left(-\frac{3}{4}\right) - 7$

$= -\frac{65}{8}$

Therefore, the vertex of the graph of f is $\left(-\frac{3}{4}, -\frac{65}{8}\right)$