

6.

Solution

To find the vertex, we look at the coefficients in the function $r(z) = az^2 + bz + c$ in this equation, $a = 2$ and $b = 9$

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

$$\frac{-b}{2a} = -\frac{9}{2(2)} = -\frac{9}{4}$$

$$\begin{aligned}\text{The second coordinate of the vertex is } r\left(-\frac{9}{4}\right) &= 2\left(-\frac{9}{4}\right)^2 + 9\left(-\frac{9}{4}\right) - 5 \\ &= -\frac{121}{8}\end{aligned}$$

Therefore, the vertex of the graph of f is $\left(-\frac{9}{4}, -\frac{121}{8}\right)$