

4.

Solution

Quadratic function: is a function that can be written in the form:

$v(f) = af^2 + bf + c$ where a , b , and c are real numbers and $a \neq 0$

we have $v(f) = 3f^2 - 5f + 8$, note: $3f^2 - 5f + 8$ is in fv -plane

Here, we know that $a=3$, $b=-5$, $c=8$

Since $a>0$, we know that the v -coordinate of the vertex is a minimum. However, to find the v -coordinate of our vertex we first need to find the f -coordinate of the vertex by using $f = -\frac{b}{2a} = -\frac{-5}{2 \cdot 3} = \frac{5}{6}$ Now that we have the f -coordinate, we can find the v -coordinate

of the vertex by finding $v\left(\frac{5}{6}\right) = 3\left(\frac{5}{6}\right)^2 - 5\left(\frac{5}{6}\right) + 8 = \frac{25}{12} - \frac{25}{6} + 8 = \frac{71}{12}$ Minimum = $\frac{71}{12}$