

6.

Solution

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

$j(k) = ak^2 + bk + c$ where a , b , and c are real numbers and $a \neq 0$

we have $j(k) = -3k^2 - 14k + 4$, note: $-3k^2 - 14k + 4$ is in kj -plane

Here, we know that $a = -3$, $b = -14$, $c = 4$

Since $a < 0$, we know that the j -coordinate of the vertex is a maximum. However, to find the j -coordinate of our vertex we first need to find the k -coordinate of the vertex by using $k = -\frac{b}{2a} = -\frac{-14}{-6} = -\frac{7}{3}$. Now that we have the k -coordinate, we can find the j -coordinate

of the vertex by finding $j(-\frac{7}{3}) = -3(-\frac{7}{3})^2 - 14(-\frac{7}{3}) + 4 = -\frac{49}{3} + \frac{98}{3} + 4 = \frac{61}{3}$ Maximum = $\frac{61}{3}$