

2.

Solution

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

$y(j) = aj^2 + bj + c$ where a , b , and c are real numbers and $a \neq 0$

we have $y(j) = -2j^2 + 14j - 4$, note: $-2j^2 + 14j - 4$ is in jy -plane

Here, we know that $a = -2$, $b = 14$, $c = -4$

Since $a < 0$, we know that the y -coordinate of the vertex is a maximum. However, to find the y -coordinate of our vertex we first need to find the j -coordinate of the vertex by using $j = -\frac{b}{2a} = -\frac{14}{-4} = \frac{7}{2}$. Now that we have the j -coordinate, we can find the y -coordinate

of the vertex by finding $y\left(\frac{7}{2}\right) = -2\left(\frac{7}{2}\right)^2 + 14\left(\frac{7}{2}\right) - 4 = -\frac{49}{2} + 49 - 4 = \frac{41}{2}$. Maximum = $\frac{41}{2}$