

6.

Solution

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

$m(u) = au^2 + bu + c$ where a , b , and c are real numbers and $a \neq 0$

we have $m(u) = -2u^2 - 7u + 18$, note: $-2u^2 - 7u + 18$ is in um -plane

Here, we know that $a = -2$, $b = -7$, $c = 18$

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

of the vertex by finding $m(-\frac{7}{4}) = -2(-\frac{7}{4})^2 - 7(-\frac{7}{4}) + 18 = -\frac{49}{8} + \frac{49}{4} + 18 = \frac{193}{8}$ Maximum = $\frac{193}{8}$