

2.

Solution

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

$t(x) = ax^2 + bx + c$ where a , b , and c are real numbers and $a \neq 0$

we have $t(x) = -3x^2 - 7x + 21$, note: $-3x^2 - 7x + 21$ is in xt -plane

Here, we know that $a = -3$, $b = -7$, $c = 21$

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

of the vertex by finding $t(-\frac{7}{6}) = -3(-\frac{7}{6})^2 - 7(-\frac{7}{6}) + 21 = -\frac{49}{12} + \frac{49}{6} + 21 = \frac{301}{12}$ Maximum = $\frac{301}{12}$