3.

Solution

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

$j(t) = at^2 + bt + c$ where a, b, and c are real numbers and $a \neq 0$

We have $j(t) = 2t^2 + 2t + 23$, note: $2t^2 + 2t + 23$ is in tj-plane

Here, we know that $a = 2$, $b = 2$, $c = 23$

Since $a > 0$,we know that the j-coordinate of the vertex is a minimum. However,to find the j-coordinate of our vertex we first need to find the t-coordinate of the vertex by using $t = -\frac{b}{2a} = -\frac{2}{4} = -\frac{1}{2}$ Now that we have the t-coordinate, we can find the j-coordinate

of the vertex by finding $j(-\frac{1}{2}) = 2(-\frac{1}{2})^2 + 2(-\frac{1}{2}) + 23 = \frac{1}{2} - 1 + 23 = \frac{45}{2}$ Minimum $= \frac{45}{2}$