1.

Solution

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

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

we have $u(t)=3t^2-7t+23$, note: $3t^2-7t+23$ is in tu-plane

Here, we know that $a=3$, $b=-7$, $c=23$

Since $a>0$,we know that the u-coordinate of the vertex is a minimum. However,to find the u-coordinate of our vertex we first need to find the t-coordinate of the vertex by using $t=\frac{-b}{2a}=\frac{-7}{6}=\frac{7}{6}$ Now that we have the t-coordinate, we can find the u-coordinate of the vertex by finding $u(\frac{7}{6})=3(\frac{7}{6})^2-7(\frac{7}{6})+23=\frac{49}{12}-\frac{49}{6}+23=\frac{227}{12}$ Minimum=$\frac{227}{12}$