3.

Solution

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

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

we have $x(j)=j^2-5j-7$, note: j^2-5j-7 is in jx-plane

Here, we know that $a=1$, $b=-5$, $c=-7$

Since $a>0$,we know that the x-coordinate of the vertex is a minimum. However,to find the x-coordinate of our vertex we first need to find the j-coordinate of the vertex by using $j=-\frac{b}{2a}=-\frac{-5}{2}=\frac{5}{2}$ Now that we have the j-coordinate, we can find the x-coordinate of the vertex by finding $x(\frac{5}{2})=1(\frac{5}{2})^2-5(\frac{5}{2})-7=\frac{25}{4}-\frac{25}{2}-7=-\frac{53}{4}$ Minimum$=-\frac{53}{4}$