3.

Solution

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

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

we have $e(u)=-u^2+11u+7$, note: $-u^2+11u+7$ is in ue-plane

Here, we know that $a=-1$, $b=11$, $c=7$

Since $a<0$,we know that the e-coordinate of the vertex is a maximum.However,to find the e-coordinate of our vertex we first need to find the u-coordinate of the vertex by using $u=-\frac{b}{2a}=-\frac{11}{-2}=\frac{11}{2}$ Now that we have the u-coordinate, we can find the e-coordinate of the vertex by finding $e\left(\frac{11}{2}\right)=-1\left(\frac{11}{2}\right)^2+11\left(\frac{11}{2}\right)+7=-\frac{121}{4}+\frac{121}{2}+7=\frac{149}{4}$ Maximum$=\frac{149}{4}$