5.

Solution

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

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

we have $j(u)=-u^2-2u-23$, note: $-u^2-2u-23$ is in uj-plane

Here, we know that $a=-1$, $b=-2$, $c=-23$

Since $a<0$,we know that the j-coordinate of the vertex is a maximum.However,to find the j-coordinate of our vertex we first need to find the u-coordinate of the vertex by using $u=-\frac{b}{2a}=-1=-1$ Now that we have the u-coordinate, we can find the j-coordinate of the vertex by finding $j(-1)=-1(-1)^2-2(-1)-23=-1+2-23=-22$ Maximum=-22