2.

Solution

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

$y(m)=am^2+bm+c$ where a, b, and c are real numbers and $a\neq 0$

we have $y(m)=-m^2-6m+19$, note: $-m^2-6m+19$ is in my-plane

Here, we know that $a=-1$, $b=-6$, $c=19$

Since $a<0$,we know that the y-coordinate of the vertex is a maximum.However,to find the y-coordinate of our vertex we first need to find the m-coordinate of the vertex by using $m=-\frac{b}{2a}=-\frac{-6}{-2}=-3$ Now that we have the m-coordinate, we can find the y-coordinate of the vertex by finding $y(-3)=-1(-3)^2-6(-3)+19=-9+18+19=28$ Maximum=28