1.

Solution

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

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

we have $n(m)=-m^2-6m-16$, note: $-m^2-6m-16$ is in mn-plane

Here, we know that $a=-1$, $b=-6$, $c=-16$

Since $a<0$,we know that the n-coordinate of the vertex is a maximum.However,to find the n-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 n-coordinate of the vertex by finding $n(-3)=-1(-3)^2-6(-3)-16=-9+18-16=-7$ Maximum$=-7$