1.

Solution

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

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

we have $p(m)=m^2-13m-1$, note: $m^2-13m-1$ is in mp-plane

Here, we know that $a=1$, $b=-13$, $c=-1$

Since $a>0$,we know that the p-coordinate of the vertex is a minimum. However,to find the p-coordinate of our vertex we first need to find the m-coordinate of the vertex by using $m=-\frac{b}{2a}=-\frac{-13}{2}=\frac{13}{2}$ Now that we have the m-coordinate, we can find the p-coordinate of the vertex by finding $p(\frac{13}{2})=1(\frac{13}{2})^2-13(\frac{13}{2})-1=\frac{169}{4}-\frac{169}{2}-1=-\frac{173}{4}$ Minimum $=-\frac{173}{4}$