1.

Solution

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

$r(d)=ad^2+bd+c$ where a, b, and c are real numbers and $a\neq 0$

we have $r(d)=d^2-8d-6$, note: d^2-8d-6 is in dr-plane

Here, we know that $a=1$, $b=-8$, $c=-6$

Since $a>0$,we know that the r-coordinate of the vertex is a minimum. However,to find the r-coordinate of our vertex we first need to find the d-coordinate of the vertex by using $d=-\frac{b}{2a}=-\frac{-8}{2}=4$ Now that we have the d-coordinate, we can find the r-coordinate of the vertex by finding $r(4)=1(4)^2-8(4)-6=16-32-6=-22$ Minimum$=-22$