2.

Solution

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

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

we have $u(d)=d^2-5d-10$, note: $d^2-5d-10$ is in du-plane

Here, we know that $a=1$, $b=-5$, $c=-10$

Since $a>0$,we know that the u-coordinate of the vertex is a minimum. However,to find the u-coordinate of our vertex we first need to find the d-coordinate of the vertex by using $d=-\frac{b}{2a}=-\frac{-5}{2}=\frac{5}{2}$ Now that we have the d-coordinate, we can find the u-coordinate of the vertex by finding $u(\frac{5}{2})=1(\frac{5}{2})^2-5(\frac{5}{2})-10=\frac{25}{4}-\frac{25}{2}-10=-\frac{65}{4}$ Minimum$=-\frac{65}{4}$