2.

Solution

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

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

we have $k(d)=-2d^2+2d-15$, note: $-2d^2+2d-15$ is in dk-plane

Here, we know that $a=-2$, $b=2$, $c=-15$

Since $a<0$,we know that the k-coordinate of the vertex is a maximum.However,to find the k-coordinate of the vertex by using $d=-\frac{b}{2a}=-\frac{2}{-4}=\frac{1}{2}$ Now that we have the d-coordinate, we can find the k-coordinate of the vertex by finding $k\left(\frac{1}{2}\right)=-2\left(\frac{1}{2}\right)^2+2\left(\frac{1}{2}\right)-15=-\frac{1}{2}+1-15=-\frac{29}{2}$ Maximum$=-\frac{29}{2}$