1.

Solution

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

$k(x)=ax^2+bx+c$ where a, b, and c are real numbers and $a\neq 0$

we have $k(x)=-x^2+9x-10$, note: $-x^2+9x-10$ is in xk-plane

Here, we know that $a=-1$, $b=9$, $c=-10$

Since $a<0$,we know that the k-coordinate of the vertex is a maximum.However,to find the k-coordinate of our vertex we first need to find the x-coordinate of the vertex by using $x=-\frac{b}{2a}=-\frac{9}{-2}=\frac{9}{2}$ Now that we have the x-coordinate, we can find the k-coordinate of the vertex by finding $k(\frac{9}{2})=-1(\frac{9}{2})^2+9(\frac{9}{2})-10=-\frac{81}{4}+\frac{81}{2}-10=\frac{41}{4}$ Maximum$=\frac{41}{4}$