6.

Solution

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

$f(y)=ay^2+by+c$ where a, b, and c are real numbers and $a\neq 0$

we have $f(y)=-y^2-5y+17$, note: $-y^2-5y+17$ is in yf-plane

Here, we know that $a=-1$, $b=-5$, $c=17$

Since $a<0$,we know that the f-coordinate of the vertex is a maximum.However,to find the f-coordinate of our vertex we first need to find the y-coordinate of the vertex by using $y=-\frac{b}{2a}=-\frac{-5}{-2}=-\frac{5}{2}$ Now that we have the y-coordinate, we can find the f-coordinate of the vertex by finding $f\left(-\frac{5}{2}\right)=-1\left(-\frac{5}{2}\right)^2-5\left(-\frac{5}{2}\right)+17=-\frac{25}{4}+\frac{25}{2}+17=\frac{93}{4}$ Maximum$=\frac{93}{4}$