6.

Solution

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

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

we have $s(y) = -y^2 + 3y + 13$, note: $-y^2 + 3y + 13$ is in ys-plane

Here, we know that a=-1, b=3, c=13

Since a<0 ,we know that the s-coordinate of the vertex is a maximum.However,to find the s-coordinate of our vertex we first need to find the y-coordinate

of the vertex by using $y = -\frac{b}{2a} = -\frac{3}{-2} = \frac{3}{2}$ Now that we have the y-coordinate, we can find the s-coordinate

of the vertex by finding $s\left(\frac{3}{2}\right) = -1\left(\frac{3}{2}\right)^2 + 3\left(\frac{3}{2}\right) + 13 = -\frac{9}{4} + \frac{9}{2} + 13 = \frac{61}{4}$ Maximum=$\frac{61}{4}$