6.

Solution

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

$g(r)=ar^2+br+c$ where a, b, and c are real numbers and $a\neq0$

we have $g(r)=-r^2+5r+24$,   note: $-r^2+5r+24$ is in rg-plane

Here, we know that a=−1, b=5, c=24

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

of the vertex by using $r=-\frac{b}{2a}=-\frac{5}{-2}=\frac{5}{2}$ Now that we have the r-coordinate, we can find the g-coordinate

of the vertex by finding $g(\frac{5}{2})=-1(\frac{5}{2})^2+5(\frac{5}{2})+24=-\frac{25}{4}+\frac{25}{2}+24=\frac{121}{4}$ Maximum=$\frac{121}{4}$