6.

Solution

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

$g(u)=au^2+bu+c$ where a, b, and c are real numbers and $a\neq 0$

we have $g(u)=2u^2+8u-21$, note: $2u^2+8u-21$ is in ug-plane

Here, we know that $a=2$, $b=8$, $c=-21$

Since $a>0$,we know that the g-coordinate of the vertex is a minimum. However,to find the g-coordinate of our vertex we first need to find the u-coordinate of the vertex by using $u=-\frac{b}{2a}=-\frac{8}{4}=-2$ Now that we have the u-coordinate, we can find the g-coordinate of the vertex by finding $g(-2)=2(-2)^2+8(-2)-21=8-16-21=-29$ Minimum$=-29$