4.

Solution

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

$g(z)=az^2+bz+c$ where a, b, and c are real numbers and $a\neq 0$

we have $g(z)=-2z^2-7z-20$, note: $-2z^2-7z-20$ is in zg-plane

Here, we know that $a=-2$, $b=-7$, $c=-20$

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 z-coordinate of the vertex by using $z=-\frac{b}{2a}=-\frac{-7}{-4}=-\frac{7}{4}$ Now that we have the z-coordinate, we can find the g-coordinate of the vertex by finding $g\left(-\frac{7}{4}\right)=-2\left(-\frac{7}{4}\right)^2-7\left(-\frac{7}{4}\right)-20=-\frac{49}{8}+\frac{49}{4}-20=-\frac{111}{8}$ Maximum$=-\frac{111}{8}$