3.

Solution

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

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

we have $p(z) = -3z^2 + 13z + 1$, note: $-3z^2 + 13z + 1$ is in zp-plane

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

Since a<0 ,we know that the p-coordinate of the vertex is a maximum.However,to find the p-coordinate of our vertex we first need to find the z-coordinate of the vertex by using $z = -\frac{b}{2a} = -\frac{13}{-6} = \frac{13}{6}$ Now that we have the z-coordinate, we can find the p-coordinate

of the vertex by finding $p(\frac{13}{6}) = -3(\frac{13}{6})^2 + 13(\frac{13}{6}) + 1 = -\frac{169}{12} + \frac{169}{6} + 1 = \frac{181}{12}$ Maximum$= \frac{181}{12}$