3.

Solution

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

$n(d) = ad^2 + bd + c$ where a, b, and c are real numbers and $a \neq 0$

we have $n(d) = -3d^2 + 10d - 13$, note: $-3d^2 + 10d - 13$ is in dn-plane

Here, we know that $a = -3$, $b = 10$, $c = -13$

Since $a < 0$,we know that the n-coordinate of the vertex is a maximum.However,to find the n-coordinate of the vertex by using $d = -\frac{b}{2a} = -\frac{10}{-6} = \frac{5}{3}$ Now that we have the d-coordinate, we can find the n-coordinate of the vertex by finding $n\left(\frac{5}{3}\right) = -3\left(\frac{5}{3}\right)^2 + 10\left(\frac{5}{3}\right) - 13 = -\frac{25}{3} + \frac{50}{3} - 13 = -\frac{14}{3}$ Maximum $= -\frac{14}{3}$