

5.

Solution

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

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

we have $g(d) = 3d^2 - 14d - 10$, note: $3d^2 - 14d - 10$ is in dg -plane

Here, we know that $a=3$, $b=-14$, $c=-10$

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 d -coordinate of the vertex by using $d = -\frac{b}{2a} = -\frac{-14}{2 \cdot 3} = \frac{7}{3}$ Now that we have the d -coordinate, we can find the g -coordinate

of the vertex by finding $g\left(\frac{7}{3}\right) = 3\left(\frac{7}{3}\right)^2 - 14\left(\frac{7}{3}\right) - 10 = \frac{49}{3} - \frac{98}{3} - 10 = -\frac{79}{3}$ Minimum $= -\frac{79}{3}$