4.

Solution

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

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

we have $f(d)=3d^2-14d$, note: $3d^2-14d$ is in df-plane

Here, we know that $a=3$, $b=-14$, $c=0$

Since $a>0$,we know that the f-coordinate of the vertex is a minimum. However,to find the f-coordinate of our vertex we first need to find the d-coordinate of the vertex by using $d=-\frac{b}{2a}=-\frac{-14}{6}=\frac{7}{3}$ Now that we have the d-coordinate, we can find the f-coordinate of the vertex by finding $f(\frac{7}{3})=3(\frac{7}{3})^2-14(\frac{7}{3})-0=\frac{49}{3}-\frac{98}{3}-0=-\frac{49}{3}$ Minimum$=-\frac{49}{3}$