5.

Solution

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

$x(n) = an^2 + bn + c$ where a, b, and c are real numbers and $a \neq 0$

we have $x(n) = 2n^2 - 14n - 25$, note: $2n^2 - 14n - 25$ is in nx-plane

Here, we know that $a = 2$, $b = -14$, $c = 25$

Since $a > 0$,we know that the x-coordinate of the vertex is a minimum. However,to find the x-coordinate of our vertex we first need to find the n-coordinate of the vertex by using $n = -\frac{b}{2a} = -\frac{-14}{4} = \frac{7}{2}$ Now that we have the n-coordinate, we can find the x-coordinate of the vertex by finding $x(\frac{7}{2}) = 2(\frac{7}{2})^2 - 14(\frac{7}{2}) + 25 = \frac{49}{2} - 49 - 25 = \frac{1}{2}$ Minimum $= \frac{1}{2}$