

Math II

Big Question: Vertex Form Application

The flight of a paper airplane follows the quadratic equation $H(x) = -(x-3)^2 + 25$, where $H(x)$ represents the height of the paper airplane in feet and x is the horizontal distance in feet the airplane travels after it is thrown.

What is the starting height of the paper airplane?

$$H(0) = -(0-3)^2 + 25 \rightarrow -(-3)^2 + 25 \rightarrow -9 + 25 \rightarrow 16$$

The starting height of the paper airplane is 16 feet.

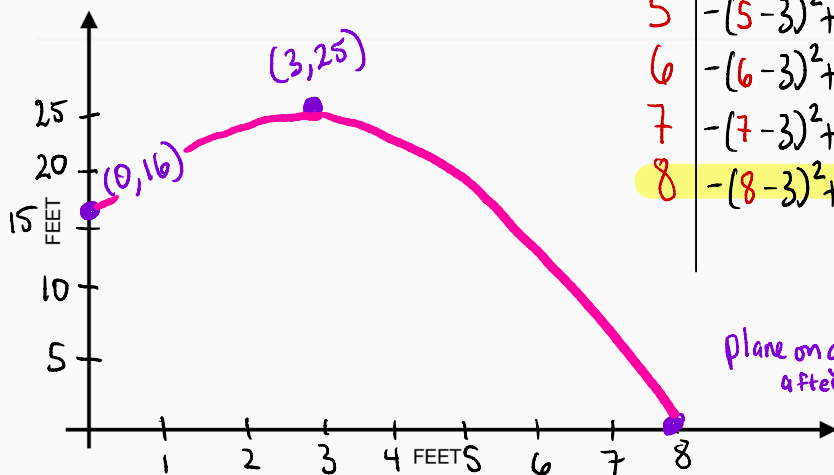
What is the vertex? Explain the meaning of the vertex in the context of the problem.

$H(x) = -(x-3)^2 + 25$
 After 3 feet, the paper airplane is at its greatest height, 25 feet.
 parabola opens down
 x-value of vertex is 3
 y-value of vertex is 25

How far the paper airplane fly horizontally?

a quick table helps us see how far the airplane approx lands.

Graph the flight of the paper airplane.



X	$-(x-3)^2 + 25$	Y
4	$-(4-3)^2 + 25$	24
5	$-(5-3)^2 + 25$	21
6	$-(6-3)^2 + 25$	16
7	$-(7-3)^2 + 25$	9
8	$-(8-3)^2 + 25$	0

plane on ground after 8 horizontal feet.