Big Question: Quadratic Application

A frog is about to hop from the bank of a creek. The path of the jump can be modeled by the equation $h(x) = -x^2 + 4x + 1$, where $h(x)$ is the frog's height above the water and x is the number of seconds since the frog jumped. A fly is cruising at a height of 5 feet above the water. Is it possible for the frog to catch the fly, given the equation of the frog's jump?

Can the frog catch the fly without jumping? How do you know?

Is the extremum a maximum or a minimum? Why?

What is the vertex of the equation? What does represent in this scenario?

If the frog jumps to catch the fly, is it possible for the frog to catch the fly? Support your answer mathematically.

Sketch the graph of the paths of the frog and fly.