

STUDENT HANDOUT

INTRODUCTION:

You are part of the NASA team tasked with controlling the Mars Helicopter: Ingenuity. From your station in the control room, the helicopter can be moves from location to location around the surface of Mars, feeding valuable information back to Earth. Today, Ingenuity has sent an image of a large range of Mars mountains right in front of it. You will need to safely fly Ingenuity over the mountain range to the other side. Luckily, satellite imagery tells you how high and wide this range is. From the data the satellite has given you, the range's highest point is 6,184 ft. The width of the mountains to flat land on the other side is 3 miles. Your team has been crunching the numbers and believes they have an equation which will safely carry Ingenuity across the mountain range.

They have presented you with the equation: $f(x) = -0.00008x^2 + x$.

ANSWER THE FOLLOWING QUESTIONS:

1. Will the above equation provide a safe path for Ingenuity to land on flat ground? Yes or No? If no, tell whether it is a problem of height or a problem of distance.
2. Graph the quadratic equation $f(x) = -0.00008x^2 + x$ to support you claims. Show why the team's equation works or does not work.