

$$h = -16t^2 + v_0t + h_0$$

Some fireworks are fired vertically into the air from the ground at an initial velocity of 80 feet per second. Find the highest point reached by the firework just as it explodes.

Graph your solution.

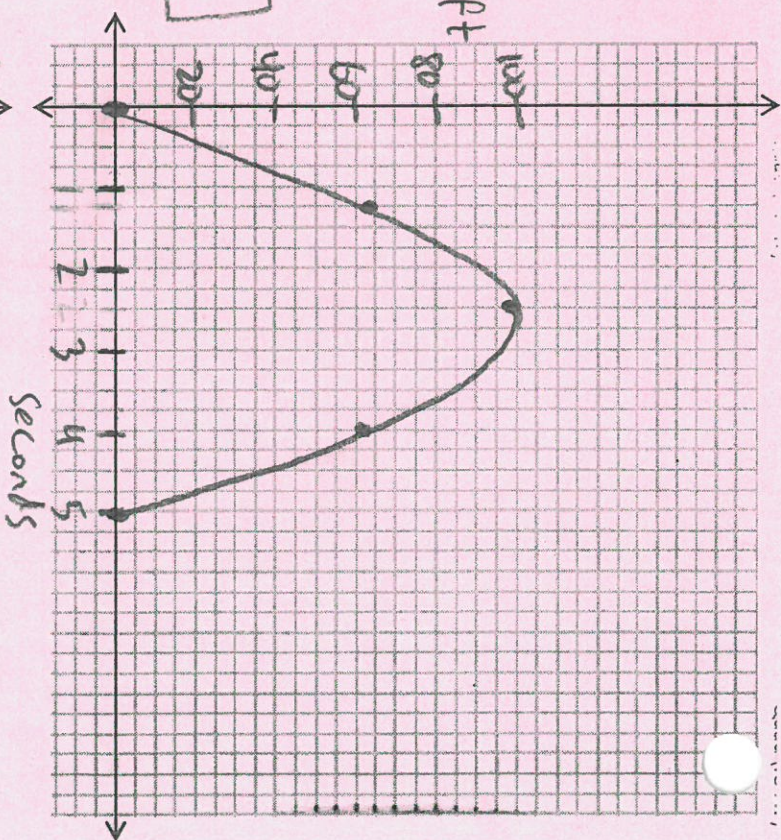
$$h(t) = -16t^2 + 80t + 0$$

$$t = \frac{-80}{2(-16)} = 2.5 \quad h(2.5) = 100$$

Max height = 100ft.

t	h(t)
0	0
1	64
2.5	100
4	64
5	0

$$h = -16t^2 + v_0t + h_0$$



A cannon is launched directly upward at 64 feet per second from a platform 80 feet high. When will the cannon reach its maximum height? What will that maximum height be?

Graph your solution.

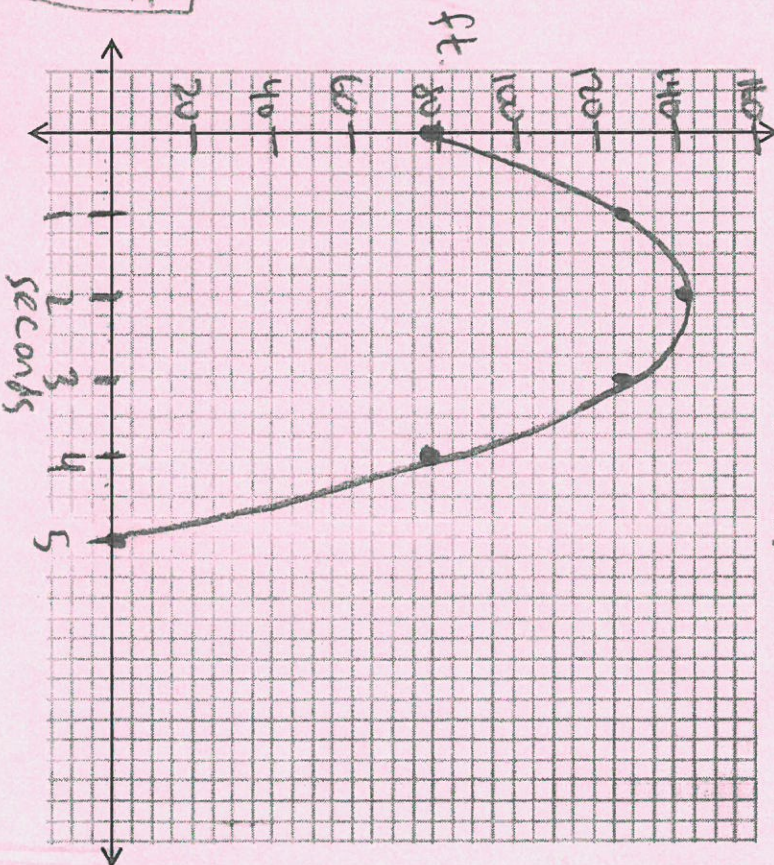
$$h(t) = -16t^2 + 64t + 80$$

$$t = \frac{-64}{2(-16)} = 2$$

$$h(2) = 144$$

Max height of 144ft after 2 seconds

t	h(t)
0	80
1	128
2	144
3	128
4	80
5	0



$$h = -16t^2 + v_0t + h_0$$

A ball is thrown vertically upward with an initial velocity of 48 feet per second. If the ball started from a height of 8 feet off the ground, determine the time it will take for the ball to hit the ground.

Graph your solution.

$$h(t) = -16t^2 + 48t + 8$$

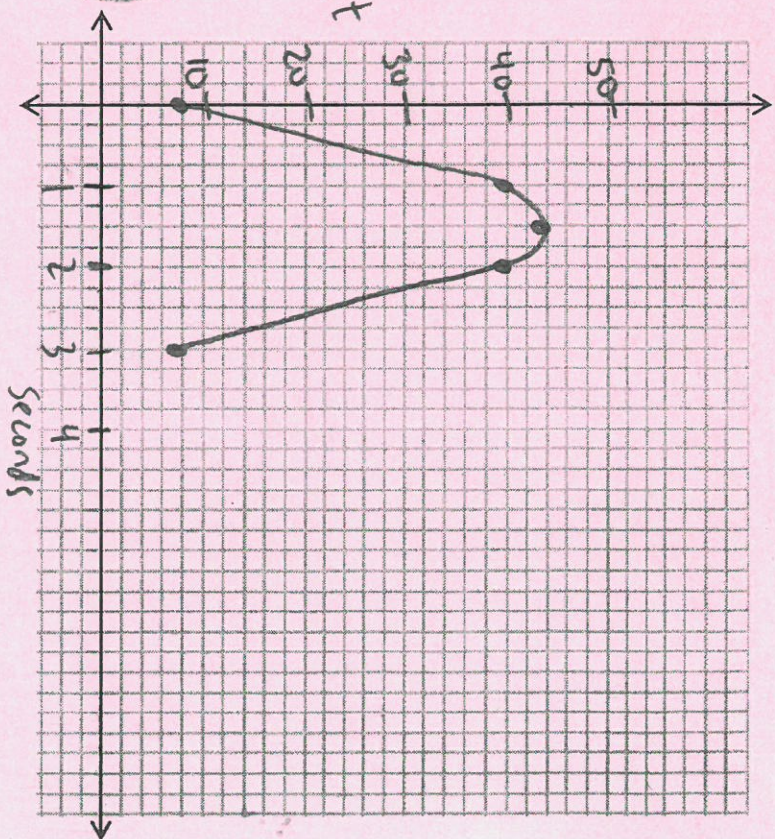
$$t = \frac{-48 \pm \sqrt{48^2 - 4(-16)(8)}}{2(-16)} = 1.5 \text{ ft}$$

$$h(1.5) = 44$$

t	h(t)
0	8
1	40
1.5	44
2	40
3	8
4	-56

$$h = -16t^2 + v_0t + h_0$$

between 3 & 4 sec



✓ out

with

graphing

calculator.

An object (I'll let you choose) is launched at 19.6 feet per second from a 58.8 feet tall platform.

What is the maximum height of the object?

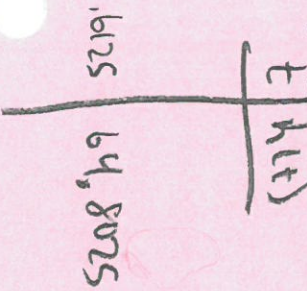
How long did it take to reach its maximum height?

$$h(t) = -16t^2 + 19.6t + 58.8$$

$$t = \frac{-19.6}{2(-16)} = .6125 \text{ ft}$$

$$h(.6125) = 64.8025$$

Graph your solution.



Max height of 64.8025 ft at .6125 sec.

