

Final Exam Review

define variables

A bottle rocket is launched upward at a speed of 64ft/sec from a platform 80ft high. Use the formula $h = -16t^2 + vt + s$ where h is height, t is time, v is initial velocity, and s is initial height.

$$h = 0$$

$$v = 64$$

$$s = 80$$



What would the path of the rocket look like?

How long will it take the bottle rocket to hit the ground?

substitute

factor, if possible

$$0 = -16t^2 + 64t + 80$$

$$0 = -16(t^2 - 4t - 5)$$

$$0 = -16(t - 5)(t + 1)$$



Which strategy should be used?



Solve

$$0 = \cancel{-16} \text{ or } 0 = (t - 5) \text{ or } 0 = (t + 1)$$

$$5 = t$$

$$\cancel{-1} = t$$

What is the answer?

$$t = 5$$

Why only one answer?

Time cannot be negative.

Summary:

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What is the maximum height the rocket reaches?



The point at the top of the flight path has a special name, what is it?

$$D = -16t^2 + 64t + 80$$

$$x = -\frac{b}{2a}$$

$$a = -16$$

$$b = 64$$

$$c = 80$$

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

$$x = -\frac{64}{-32}$$

$$x = 2$$

After 2 seconds, what is the height?

$$y = -16(2)^2 + 64(2) + 80$$

$$y = -64 + 128 + 80$$

$$y = 144$$

$$144 \text{ ft}$$

what is the formula for the vertex?

find the vertex.

What is the max height?

Summary: