The height of water in the air t seconds after it is squirted from a fountain can be modeled by the function $y = -16t^2 + 64t + 4$, where t and y are measured in feet.

**I SUGGEST YOU HEAD TO DESMOS TO SEE IT BEFORE YOU BEGIN.**

- How high is the fountain? (hint: y-intercept...its where the water 'starts')
- What is the maximum height that the water reaches? And how long does it take to reach that height? (hint: vertex-google the 'vertex formula of a quadratic')
- How long until the water hits the ground? (hint: the height would be 0 if the water is on the ground)Use completing the square to solve this problem.

We are standing on the top of a 1680 ft tall building and throw a small object upwards. At every second, we measure the distance of the object from the ground. Exactly t seconds after we threw the object, its height, (measured in feet) is

$$h(t) = -16t^2 + 256t + 1680$$

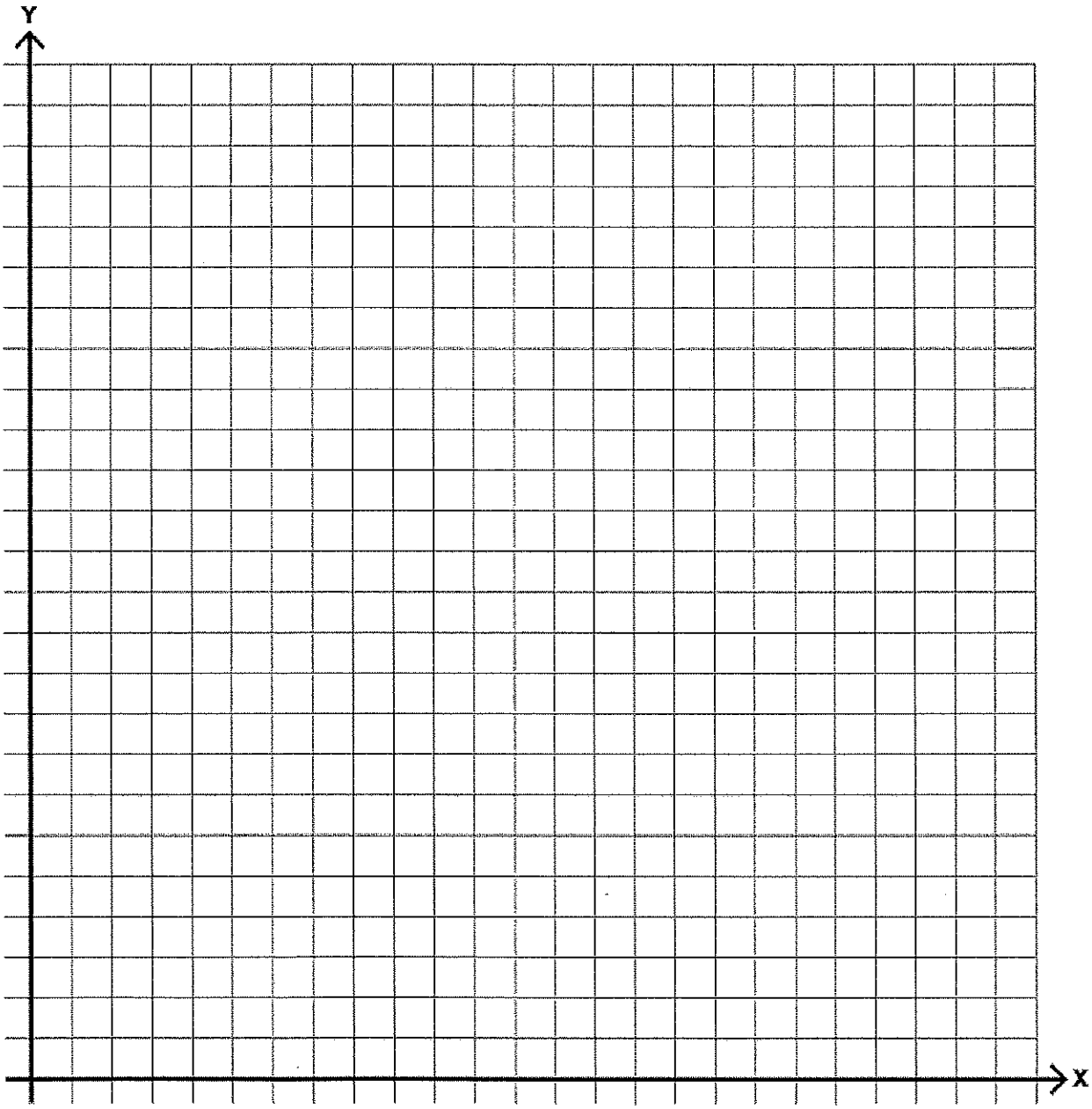
**AGAIN, I SUGGEST YOU HEAD TO DESMOS TO SEE IT BEFORE YOU BEGIN.**

a) Find h (3). (h (3) represents the objectís position 3 seconds after we threw it.)

b) How much does the object travel during the two seconds between 5 seconds and 7 seconds?

c) How long does it take for the object to reach a height of 2640 ft?

d) How long does it take for the object to hit the ground?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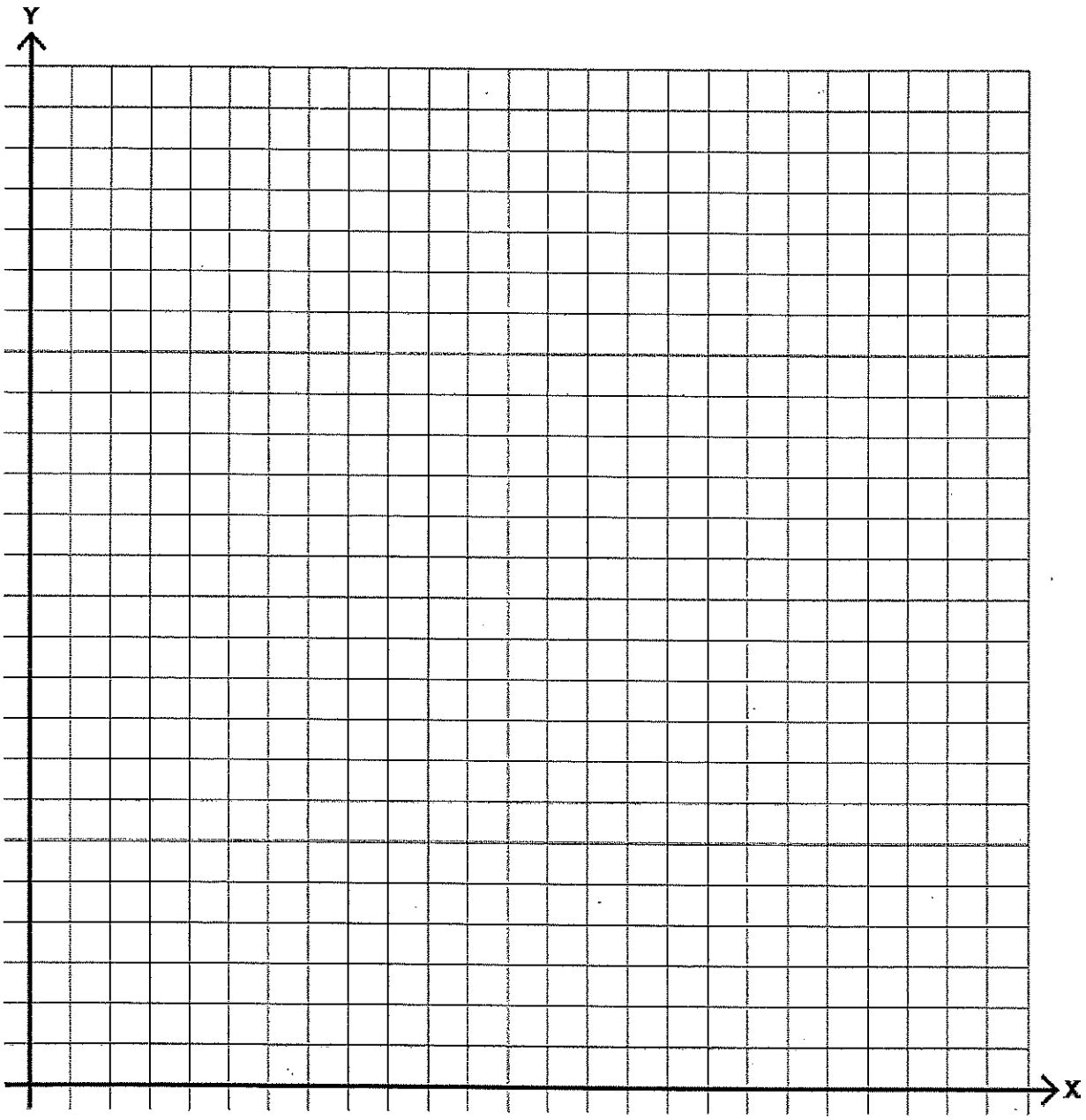
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