QUESTION:
A graduation hat is thrown vertically with a speed of 5m/s.how long does it take the hat to reach maximum height

SOLUTION:
Let's assume that there is no air resistance. Then, the velocity of the hat is
$$\upsilon(t) = \upsilon_0 - gt$$

When hat reaches its maximum height ($t = t_{max}$) its velocity is equal to zero:
$$0 = \upsilon_0 - gt_{max}$$
$$t_{max} = \frac{\upsilon_0}{g}$$
$$t_{max} = \frac{5}{9.8} = 0.51 \text{ s}$$

ANSWER:
$$t_{max} = 0.51 \text{ s}$$