## Answer on Question \#51494, Physics, Mechanics | Kinematics | Dynamics

## Question:

A bullet it shot vertically into the air with an initial velocity of $109.8 \mathrm{~m} / \mathrm{s}$. Calculate the time (in seconds) taken for the bullet to reach its maximum height.

Take gravitational acceleration to be $9.81 \mathrm{~m} / \mathrm{s} 2$.

## Answer:

A bullet will reach maximum height when $v=0$ :

$$
v=v_{0}-g t=0
$$

where $v_{0}$ is initial velocity, $g$ is gravitational acceleration, $t$ is time.

$$
t=\frac{v_{0}}{g}=\frac{109.8 \frac{\mathrm{~m}}{\mathrm{~s}}}{9.81 \frac{\mathrm{~m}}{\mathrm{~s}^{2}}}=11.19 \mathrm{~s}
$$

Answer: 11.19 s

