Answer on Question #38882, Physics, Mechanics

Question:

What is the hang time of a rocket that is launched at an angle of 45 degrees with a launch velocity of 60m/s?

Answer:

Height for uniformly accelerated motion equals:

$$h = v_0 \sin \alpha * t - \frac{gt^2}{2}$$

where v_0 - initial velocity of the ball, g – gravitational acceleration, t – time.

Time when height equals 0:

$$v_0 \sin \alpha * t - \frac{gt^2}{2} = 0$$

$$t = \frac{2v_0 \sin \alpha}{g} = 8.7 \ s$$

Answer: 8.7 s