

Name: _____

Date: _____

Hour: _____

Projectile Motion HW-1

- 1) Jason jumped off a 480-foot cliff into the ocean in Acapulco while vacationing with some friends. His height as a function of time could be modeled by the function $h(t) = -16t^2 + 16t + 480$, where t is the time in seconds and h is the height in feet.
- Draw a picture to represent the scenario
 - How long did it take for Jason to reach his maximum height?
 - What was the highest point that Jason reached?
 - Jason hit the water after how many seconds?

- 2) If a toy rocket is launched vertically upward from ground level with an initial velocity of 128 feet per second, then its height h after t seconds is given by the equation $h(t) = -16t^2 + 128t$ (if air resistance is neglected).
- Draw a picture to represent the scenario
 - How long will it take for the rocket to return to the ground?
 - How long will it take the rocket to reach its maximum height?
 - What is the maximum height?

3) You and a friend are hiking in the mountains. You want to climb to a ledge that is 20ft. above you. The height of the grappling hook you throw is given by the function $h(t) = -16t^2 - 32t + 5$.

- a. Draw a picture to represent the scenario
- b. How long will it take for the hook to reach the ground?
- c. How long will it take for the hook to reach maximum height?
- d. What is the maximum height of the grappling hook?
- e. Can you throw it high enough to reach the ledge?