Copying Is Unacceptable Per ____ Name _____
HW 3.4 Gazelles out of Cannons off Cliffs

1. A gazelle is launched at 20 m/s from a 50 meter high cliff at a 40 degree angle with respect to the horizontal.

   a. What is the horizontal component of the gazelle's velocity?

   b. What is the vertical component of the gazelle's velocity?

   c. How much time will the gazelle be in the air? (the kinematics are given in *this* problem)

X	**Y**
$\Delta x=$	$\Delta y=$
$v_x=$	$v_i=$
$t=$	$v_f=$
	$a= -9.8\ m/s^2$
	$t=$

$v_f^2 = v_i^2 + 2a\Delta y$

$v_f=$

$v_f = v_i + at$

$t=$

   f. How far from the base of the cliff will the gazelle hit the ground?

   g. How high relative to the cliff will the gazelle go?

$\Delta y=$

$v_i=$

$v_f= 0\ m/s$

$a= -9.8\ m/s^2$

$t=$

2. A circus stunt gazelle is shot out of a cannon at 35 m/s at an angle of 55 degrees. The cannon is located at the edge of a cliff that is 120 meters high.

   a. How long was the gazelle in the air?

X	Y

   b. How far away from the base of the cliff did the stunt gazelle safely land?

   c. What maximum height above the ground did the gazelle achieve?

3. James Bond fires his Walther PPK **downward** off a cliff at a 27 degree angle. The muzzle velocity of a Walther PPK is 256 m/s. The bullet struck the ground next to Dr. No's foot 0.8 seconds after it was fired.

   a. How high is the cliff?

X	Y

   b. How far from the cliff was Dr. No standing?