Directions: Answer the following motion problems using the kinematic equations for free fall. Show all your work and circle your final answer.

1. A rock gradually rolls off a cliff and falls to the ground below. It takes the rock 7.23 seconds to hit the ground below the cliff. How high is the cliff?
2. A baseball player throws a baseball straight up into the air and it takes 3.75 seconds it to reach maximum height. What is the total time of flight for the baseball after being thrown and the baseball player catching it?
3. If the initial velocity of a ball is sent straight upward at 10.5 m/s from the ground, what will its final velocity be when it hits the ground at the end of its flight?
4. An arrow is shot straight up into the air with a velocity of 95.0 m/s. What is the maximum height of the arrow?
5. A little kid stands along the edge of a very steep cliff and shoots a rock with a sling shoot straight up into the air with a velocity of 65.0 m/s. If the rock falls down to the bottom of the cliff and it took 45.3 seconds to fall. How high is the cliff?
6. A wild and crazy monkey at the Philadelphia Zoo throws his banana straight down onto the ground after a spectator gave the monkey a dirty face. The monkey threw the banana with a velocity of -7.5 m/s towards the ground. If the monkey was 15.0 meters off the ground when he threw it, how long did it take the banana to hit the ground after being thrown?