Free Fall Day 2

Name: _____

$d = v_i t + (0.5)at^2$
$v_f = v_i + at$
Free Fall: $a = -10\ m/s^2$

1. Dana Kunze fell for about 3.3 seconds in the video. Assuming he started from rest and that he was in free fall...
    a) How far did he fall?
    b) What was his final velocity, just before he hit the water?
    c) He actually dove from a height of 52.4 meters. Comparing this number to your answer for part a, would you say that he was in exact free fall, close to free fall, or not close at all to free fall?

2. You are exploring the Grand Canyon and are curious about how far down it goes. You drop a rock over the edge and hear it hit about 19 seconds later. How far down is it?

3. Use the equations to fill out the table. (Again, assume it is free fall from rest.)

t (sec)	0	1	2	3	4	5
d (m)	0					
vf (m/s)	0					

4. Look closely at the table in #3.

a) What is the pattern of jumps in the velocities? (easy)

b) What is the pattern of jumps in the distances? (tricky)

5. If Dana Kunze had jumped near Jupiter, the acceleration of gravity would have been -26 m/s^2.

a) How fast would he he going after falling for 3.3 seconds on Jupiter?

b) How far would he fall on Jupiter in 3.3 seconds?

6. On August 16 1960, US Air Force pilot Joe Kittinger rose to a height of 102,800 ft in a helium balloon and jumped. He hit a top velocity of about -270 m/s! Assuming he had very little drag from the air...

a) How many seconds did it take him to reach that speed?

b) How far did he fall in that time?