Name: Kinematic and Free Fall Assignment

1. A motorcycle accelerates uniformly from 13.00 m/s to 52.0 m/s and moves a distance of 90.0 m. How long does it take the motorcycle?(2 marks)
2. Using the information in question 1, what is the motorcycle’s acceleration? (2 marks)
3. A ball is dropped off a bridge with a velocity of -2.00m/s and strikes the ground 10.0seconds later. What is the final velocity of the ball? The acceleration of gravity is -9.81m/s) (2 marks)
4. Taylor Swift uses a T-Shirt Cannon to launch a T-shirt straight in the air from the stage with a velocity of 13.0m/s. The stage is 7.134m above the ground. How long does it take the T-Shirt to hit the ground and with what velocity does it hit the ground? (6 marks)
5. Using the information from question 4, with what velocity does the T-shirt hit the ground if Taylor just drops it? (1 mark)
6. Doug Hole throws a water balloon (downward velocity of 2.58m/s) from the top of the stairs to the bottom of the stairs to hit Ella Vader who is 1.52m tall. The staircase is 4.17m tall. With what velocity does it strike her if it strikes her on the head? (3 marks)
7. Kenya Dewit throws a baseball into the air with a velocity of 15.6m/s. How high did it go? (2 marks)
8. Heidi Claire drives her car at 27.2m/s and then accelerates for 4.2s at 3.2m/s2. She then maintains a constant velocity for the next 10.0 seconds. What is her displacement? (5 marks)