PHYS 211 Collision and Impulse Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. | 2. | 3. | 4. | 5. |
|  |  |  |  |  |

 Impulse: 

P26: In a common but dangerous prank, a chair is pulled away as a person is moving downward to sit on it, causing the victim to land hard on the floor. Suppose the victim falls by 0.50 m, the mass that moves downward is 70 kg, and the collision on the floor lasts 0.082 s. What are the magnitudes of the (a) impulse and (b) average force acting on the victim from the floor during the collision?

P37: A soccer player kicks a soccer ball of mass 0.5 kg that is initially at rest. The player's foot is in contact with the ball for 1 x 10-3 s, and the force of the kick is given by
*F*(*t*) = [(6 x 105)*t* - (3 x 108)*t*2] N, for 0≤ *t*≤ 1 x 10-3s, where *t* is in seconds.
Find the magnitudes of the following: **(a)** the impulse on the ball due to the kick, **(b)** the average force on the ball from the player's foot during the period of contact, **(c)** the maximum force on the ball from the player's foot during the period of contact, and **(d)** the ball's speed immediately after it loses contact with the player's foot.