

Physics 10154 - Exam #6D

Answer the following two questions. Be sure to clearly indicate your answer with a circle or box. Show all work. If I cannot see how you arrived at an answer, I will deduct points!

1. Two cars of equal mass collide at an intersection and move as one after the collision. Car A is moving North at 24 m/s. Car B is moving 33° North of East at an unknown speed. Immediately after the collision, the two cars move off at an angle of 67° North of East. What was the speed of car B prior to the collision?

2. A 22-gram bullet collides with a 650-gram pendulum bob initially at rest. After the collision, the bullet passes through the bob and goes on at a speed of 180 m/s. The 1.2-meter pendulum rises to a maximum angle of 22° after the collision. What is the initial speed of the bullet prior to the collision?