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General Physics I, Quiz 1
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SN:_____, Name:_____

Chapter 1-6, Serway; ABSOLUTELY NO CHEATING!
Please write the answers on the blank space or on the back of this paper to save resources.

1. A fish swimming in a horizontal plane has velocity $\vec{\mathbf{v}}_i = \left(4.00\hat{\mathbf{i}} + 1.00\hat{\mathbf{j}}\right)\text{m/s}$ at a point in the ocean where the position relative to a certain rock is $\vec{\mathbf{r}}_i = \left(10.0\hat{\mathbf{i}} - 4.00\hat{\mathbf{j}}\right)\text{m}$. After the fish swims with constant acceleration for 20.0 s, its velocity is $\vec{\mathbf{v}}_i = \left(20.0\hat{\mathbf{i}} - 5.00\hat{\mathbf{j}}\right)\text{m/s}$. (a) What are the components of the acceleration of the fish? (b) What is the direction of its acceleration with respect to unit vector $\hat{\mathbf{i}}$? (c) If the fish maintains constant acceleration, where is it at *t* = 25.0 s and in what direction is it moving?

2. The mass of a sports car is 1 200 kg. The shape of the body is such that the aerodynamic drag coefficient is 0.250 and the frontal area is 2.20 m^2. Ignoring all other sources of friction, calculate the initial acceleration the car has if it has been traveling at 100 km/h and is now shifted into neutral and allowed to coast.