

Name: _____

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- 6.** A particle initially located at the origin has an acceleration of $\vec{\mathbf{a}} = 3.00\hat{\mathbf{j}} \text{ m/s}^2$ and an initial velocity of $\vec{\mathbf{v}}_i = 5.00\hat{\mathbf{i}} \text{ m/s}$. Find (a) the vector position of the particle at any time t , (b) the velocity of the particle at any time t , (c) the coordinates of the particle at $t = 2.00 \text{ s}$, and (d) the speed of the particle at $t = 2.00 \text{ s}$.

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