Vector functions Quiz 1

The position of a particle at any time $t \geq 0$ is given by $x(t) = t^2 - 2, y(t) = \frac{2}{3}t^3$

1. Find the magnitude of the velocity vector at $t = 2$.

2. Set up but do not evaluate an integral expression to calculate the total distance traveled by the particle from $t = 0$ to $t = 4$.

3. Find $\dfrac{dy}{dx}$ as a function of t and also as a function of x.

4. At what time t is the particle on the y-axis? What is its acceleration vector at that time?