

1. Determine if the curve $x = t^2 - 3t + 5$, $y = t^3 + t^2 - 10t + 9$ intersects itself at the point (3, 1).

2. A point traces a curve whose parametric equations are given by the following

$$x(t) = \frac{t^3}{3} - 6t^2 + 20t \quad , \quad y(t) = \frac{-t^3}{3} + 5t^2 + 5 .$$

A. When is the object moving to the right? To the left?

B. Does the particle ever stop? If so, when and where?

C. Find the point where the particle is moving only horizontally (if it ever does). Moving only vertically.

D. Find $\left. \frac{dy}{dx} \right|_{t=5}$