Parametrics Quiz 2

1. Find $\frac{dy}{dx}$ and $\frac{dy^2}{dx^2}$ for the parametric system $x(t) = t^2$ and $y(t) = t^2 + 6t + 5$

2. A Curve C is defined by the parametric equation $x(t) = t^2 + t - 1$ and $y(t) = t^3 - t^2$. Find an equation to the tangent line to C at the point where $t = 2$.

3. Find the points of horizontal and vertical tangency to $x(t) = t + 5$, $y(t) = t^2 - 4t$.

4. Write an integral expression for the arc length of $x(t) = e^{2t}$ and $y(t) = 3t - 1$ over the interval $-2 \leq t \leq 2$