Quiz

1. A curve is defined by the parametric equations $x(t) = 3e^{2t}$ and $y(t) = e^{3t} - 1$. What is $\frac{d^2y}{dx^2}$ in terms of t ?
2. A particle moves on a plane curve so that at any time $t > 0$ its x -coordinate is $t^3 - t$ and its y-coordinate is $(2t - 1)^3$. The acceleration vector of the particle at $t = 1$ is
3. What is the slope of the line tangent to the polar curve $r = 1 + 2\sin\theta$ at $\theta = 0$?
4. The area of the region inside the polar curve $r = 4\sin\theta$ and outside the polar curve $r = 2$ is given by
5. The function r satisfies $\frac{dr}{d\theta} = 3\sin\theta + 3\theta\cos\theta$. For $0 \leq \theta \leq 2\pi$, find the value of θ that gives the point on the graph that is farthest from the origin. Justify your answer.