

The majority of the credit you receive will be based on the completeness and the clarity of your responses. **Show all of your work and justify your solutions as much as possible.**
This is a 20 minute quiz and has 2 questions, for a total of 10 points

- (5 points) 1. Consider the parametric equations: $x = 1 + \ln(t)$, $y = t^2 + 1$. Find $\frac{dx}{dt}$, $\frac{dy}{dt}$, and $\frac{dy}{dx}$ in terms of t . Then find the equation of the tangent line to this parametric curve at the point $(1, 3)$.

- (5 points) 2. Sketch the polar curve $r = \cos(2\theta)$ for $0 \leq \theta \leq 2\pi$.