

Name _____

- Write as neatly as you can!
- No calculators are allowed.
- You must show your work to obtain full credit.

1. (5 points) Find a parametric equation of the tangent line to the curve $\vec{r}(t) = \langle \frac{\pi}{t}, \cos^2(t), e^t \rangle$ at the point $(1, 1, e^\pi)$.

2. (5 points)

- (a) Let $\vec{r}(t) = \langle 0, t, t^2 \rangle$ and $\vec{s}(u) = \langle u \sin(\pi u), u \cos(\pi u), u \rangle$. Find the intersection points of $\vec{r}(t)$ and $\vec{s}(u)$.
- (b) Which (if any) of these intersection point(s) are collision points?