

Math 1451, Honor Calculus Practice4, Spring 2016.

February 10, 2016

PSID: \_\_\_\_\_ Name: \_\_\_\_\_

1. (a) Find the point of intersection of the tangent lines to the curve  $\mathbf{r}(t) = \langle \sin(\pi t), 2 \sin(\pi t), \cos(\pi t) \rangle$  at the points where  $t = 0$  and  $t = 0.5$ .  
(b) Illustrate by graphing the curve and both tangent lines. What is the parametric equation of the tangent line at  $t = 0$ ?

2. The curves  $\mathbf{r}_1(t) = \langle t, t^2, t^3 \rangle$  and  $\mathbf{r}_2(t) = \langle \sin(t), \sin(2t), t \rangle$  intersect at the origin. Find the value of cosine of their angle of intersection.