

San Jose State University
Department of Mathematics

Math 32, Instructor: Plamen Koev, Practice Midterm 2, Fall 2008

1. Find the angle of intersection of the curves $r_1(t) = \langle t, 1 - t, 3 + t^2 \rangle$ and $r_2(s) = \langle 3 - s, s - 2, s^2 \rangle$.
2. Find the length of the curve $r(t) = \langle \cos t, \sin t, \ln \cos t \rangle$ for $0 \leq t \leq \pi/4$.
3. Find the curvature of $r(t) = \langle e^t \cos t, e^t \sin t, t \rangle$ at the point $(1, 0, 0)$.
4. Find the equations of the normal and osculating planes to the curve $r(t) = \langle \cos t, \sin t, \ln \cos t \rangle$ at the point $(1, 0, 0)$.
5. What is the minimum speed of a particle with position function $r(t) = \langle t^2, 5t, t^2 - 16t \rangle$?