Math 138A
Winter 2010

UPDATED GENERAL INFORMATION — JANUARY 22, 2010

The quiz on Tuesday, January 26, will be a problem about finding the curvature of a specific curve. A few examples of problems considered for the quiz are given below. It is likely that some features of some of these problems will appear in the actual quiz problem.

1. Find the points on the graph of $y = \sin x$ where the curvature is zero. The parametrization $\mathbf{x}(t) = (t, \sin t, 0)$ is recommended.

2. If $\mathbf{x}(t)$ is the curve described by the parametrization $(t, t^3 - t, 0)$, find the curvature as a function of t.

3. If $\mathbf{x}(t)$ is the curve described by the parametrization $(\cos t, \sin t, \cos 2t)$, find the curvature as a function of t.

4. Find the curvature of the graph of $y = 1/x^2$ at the point $(1, 1, 0)$. The parametrization $\mathbf{x}(t) = (t, 1/t^2, 0)$ is recommended. [*Note:* Since the value of the curvature only depends upon the vectors $\mathbf{x}'(1)$ and $\mathbf{x}''(1)$, it is not necessary to find an explicit formula for the cross product $\mathbf{x}'(t) \times \mathbf{x}''(t)$ as a function of t.]