MAC 2313 STUDY GUIDE FOR TEST 1

1.) Write an equation of an ellipse, hyperbola or parabola. (Reference: Quiz 1; suggested homework for section 10.1.)

2.) (i) Eliminate the parameter from parametric equations.

(ii) Do calculus of parametric curves (first derivative and the slope; second derivative and concavity; equation of the tangent line). (Reference: Quiz 2; suggested homework for sections 10.2 and 10.3.)

3.) Find the arc length of a given parametric curve. (Reference: Quiz 2; problem 49 on page 726.)

4.) (i) Convert a point from xy-coordinates to polar coordinates.

(ii) Convert an equation from from xy-coordinates to polar coordinates. (Reference: Quiz 3; suggested homework for section 10.4.)

5.) Given a polar curve $r = f(\theta)$, find the slope of the tangent line to the curve at the point with specified θ. (Reference: Quiz 3; problem 59 on page 737.)

6.) A question about vectors based on the material of Sections 11.1 and 11.2. (Reference: Examples 2, 3, 4, 5, 6 on pages 763–768; Examples 3 and 4 on pages 775–776; Quiz 4.)

7.) Find the angle θ between vectors $\vec{v}$ and $\vec{w}$. (Reference: Quiz 4; suggested homework for section 11.3.)

8.) (i) Find the projection of a vector $\vec{v}$ onto a vector $\vec{w}$.

(ii) Find the orthogonal component of $\vec{v}$ in the direction of $\vec{w}$. (Reference: Quiz 4; suggested homework for section 11.3.)

9.) Find an equation of the plane that contains three given points. Here, you need to know the cross product. (Reference: Example 3 on page 800; suggested homework for section 11.5; suggested homework for section 10.4.)

10.) Find an equation of a straight line. You should know both parametric and symmetric form of the equation. (Reference: Examples 1 and 2 on page 798–799; suggested homework for section 11.5.)

11.) Write an equation of the sphere with given properties. (Reference: Example 2 on page 774; problems 37 and 39 on page 778).