MAT 2130 EXAM 1 REVIEW

You should:

Section 12.1 – know the distance formula and how to determine the equation of a sphere, know how to describe traces

Section 12.2 – know how to find parametric equations of line segments and subsets of circles.

Section 12.3 – be able to convert points in rectangular coordinates to polar and points in polar coordinates to rectangular, be able to convert formulas for curves from rectangular to polar and polar to rectangular, be able to plot polar curves and to parametrize a circle into polar coordinates

Section 12.4 – understand how to plot vectors in the plane and how to manipulate vectors arithmetically and geometrically with the basic operations (addition and scalar multiplication), know what unit vectors are and how to generate one in a given direction

Section 12.5 – understand the concept of a vector-valued function and how to manipulate them (add, differentiate, anti-differentiate, etc…); be able to find the speed of a vector-valued function at a point and how to compute the arclength over an interval.

Section 12.6 – understand the relationships between position, velocity, and acceleration of a particle in higher dimensions and knowing one, how to compute the others, know the geometric representation of position, velocity vectors and how to determine properties of the motion using the components of those vectors.

Section 12.7 – know the definition of the dot product and how to use it to find the angle between vectors in two or three dimensions; know how to compute the projection of one vector onto another and how to use the projection to find distances from points to lines.

Section 12.8 – know how to determine vector and symmetric scalar forms of a line; know how to determine vector, scalar, and parametric forms of a plane; and how to determine intersections between a line and a plane and between two planes or between two lines.

Section 12.9 – know how to compute the cross product and how to use it to find perpendicular vectors; know how to find a normal vector of a plane given 3 points in the plane and how to find the area of a parallelogram spanned by 2 vectors.