

## **Chapter 9: Polar Coordinates and Parametric Equations**

### **Upon successful completion of Chapter 9, the student should be able to:**

Sketch graphs of polar equations, convert rectangular equations to polar equations, and convert polar equations to rectangular equations.

Use derivatives and integrals to calculate slopes, rates of change and areas in polar coordinates.

Describe conic sections as loci of points, and apply reflection properties of conics in physical and geometric contexts.

Classify conic sections by their eccentricity and describe conics in terms of polar coordinates.

Sketch graphs of parametric equations in two-dimensions, and extract information from parametric equations and their graphs.

Use parametric equations to model linear, rotational and other motion.

Use derivatives and integrals to calculate direction (slope, angle), speed and distance measured along a curve.