

Instructional Flow – Unit 6 – Vectors, Parametrics, and Polars

6.1 Vectors in the Plane

- definition of two-dimensional vectors
- vector operations
- unit vectors
- equivalent representations of vectors
- applications



6.2 Dot Product of Vectors

- definition and properties
- angle between vectors
- *vector projections*
- applications including force
- distance from a point to a line and its applications

**Section 8.6 (Honors) may be completed after section 6.2*



6.3 Parametric Equations and Motion

- definition of parametric equations
- equivalent parametric and rectangular forms
- vector and parametric equations of lines in the plane
- motion in the plane and its applications



6.4 Polar Coordinates

- *polar coordinate system*
- *equivalent rectangular and polar forms*



6.5 Graphs of Polar Equations

- *relationship between polar and parametric curves*
- *analyzing polar curves*



6.6 DeMoivre's Theorem and n^{th} Roots

- *trigonometric forms of complex numbers*
- *multiplication and division of complex numbers*
- *powers and roots of complex numbers*



***8.6 Three-Dimensional Cartesian Coordinate System**

- *Cartesian space*
- *midpoint and distance formulas*
- *equations of lines, planes, and spheres in space*
- *vectors in space*