Topics covered for Exam Three Math 1523

1) **Vectors**

   a) **Naming the vector given terminal and initial points**

   b) **Operations with vectors [scalar mult. , addition and subtraction]**

   c) **Finding norm and direction angle of a vector**

   d) **Name a vector given norm and direction angle**

   e) **Find a unit vector**

   f) **Find a vector in same direction but with a different length**

2) **Dot Product**

   a) **Find dot product of two vectors**

   b) **Find the angle between two vectors**

   c) **Determine if two vectors are parallel**

   d) **Determine if two vectors are orthogonal**

3) **Trigonometric form to complex form**

4) **Complex form to Trigonometric form**

5) **Parabolas**

   a) **Find vertex, focus and / or directrix**

   b) **Find equation of parabola given information**

   i) **Vertex at origin and another point**

   ii) **Vertex and focus ; Vertex and directrix ; Focus and directrix**

6) **Ellipse**

   a) **Find center, vertices, foci and length of major and minor axes**

   b) **Find equation given vertices and foci**

   c) **Find info in part a using completing the square**

7) **Hyperbola**

   a) **Find center, vertices, foci and asymptotes**

   b) **Find equation given vertices and foci**

   c) **Find info in part a using completing the square**

   d) **Classifying a conic as a parabola, ellipse or hyperbola**

8) **Polar Coordinates**

   a) **Convert polar coordinates to rectangular coordinates**

   b) **Convert rectangular coordinates to polar coordinates**

   c) **Convert polar equations to rectangular equations**

   d) **Convert rectangular equations to polar equations**

   e) **Determining in which quadrant a given polar point is located**