MTH 264, Quiz #16, Fall 2022   Name _____

Instructions: Work the problems below as directed. Show all work. Clearly mark your final answers. Use exact values unless the problem specifically directs you to round. Simplify as much as possible. Partial credit is possible, but solutions without work will not receive full credit.

1. For each of the problems below, determine which type of graph it is: circle, ellipse, parabola or hyperbola.
   a. $9x^2 + 4y^2 + 27x + 16y - 49 = 0$
   b. $2x^2 + 2y^2 + 6x + 28y - 113 = 0$
   c. $9x^2 + 4x - 8y + 12 = 0$
   d. $3x^2 - 15y^2 - 9x + 150y - 73 = 0$

2 Determine whether the polar conics below are circles, ellipses, parabolas or hyperbolas. What is the eccentricity of each graph?

   a. $r = \dfrac{2}{1-\cos\theta}$

   b. $r = 9\sin\theta$

   c. $r = \dfrac{5}{3+4\sin\theta}$

   d. $r = \dfrac{-1}{3+\cos\theta}$