- 6.6 Parametric Equations
- 6.7 Polar Coordinates
- 6.8 Graphs in Polar Coordinates
- 6.9 Conic Sections in Polar Coordinates
 - 1. The parametric equations $x = 4\cos(t)$, $y = 3\sin(t)$ describe an ellipse.
 - a. (5 pts) Eliminate the parameter and express the relationship in rectangular coordinates in x and y.
 - b. (5 pts) Sketch the ellipse.
 - c. (Bonus 5 pts) Find the foci of the ellipse. Add them to the graph in part b.
 - 2. (5 pts) Convert $P = (5, -5\sqrt{3})$ to polar coordinates from rectangular coordinates. Represent this point in 4 different ways, using angles between -2π and 2π . Give exact answers in radians.
 - 3. (5 pts) Convert P = (-2, -3) to polar coordinates. Give the angle θ in radians, rounded to 3 decimal places. Make θ a positive angle, between 0 and 2π
 - 4. (Bonus 5 pts) Give the exact answer for #3.
 - 5. Let $r = 2\sin(2\theta) + 1$
 - a. (5 pts) Sketch the graph of *r* in *rectangular* coordinates. Graph it over the interval $[0, 2\pi]$. Label all intercepts and highs and lows.
 - b. (5 pts) Sketch the graph of r in *polar* coordinates. Label all intercepts and highs and lows.
 - 6. Identify the conic section and sketch its graph.

a. (5 pts)
$$r = \frac{32}{3 - 5\sin\theta}$$

b. (5 pts) $r = \frac{32}{1 - \cos\theta}$
c. (5 pts) $r = \frac{16}{4 + 2\sin\theta}$

7. Bonus

- a. (5 pts) Write #6a in standard form in rectangular coordinates.
- b. (5 pts) Write #6b in standard form in recangular coordinates.
- c. (5 pts) Write #6c in standard form in rectangular coordinates.