Exercise 1:
Use MATLAB to plot the graphs of each of the following. Then determine what interval for $t$ is needed in order to trace the entire graph only once. (Use subplot(2,2,1) through subplot(2,2,3) to get the three graphs onto one window.)

a.) interval for $t$ in order to trace $r = 4\cos(2t)$ only once:
   (1) Circle one:
   1. $[0, \pi/3]$  2. $[0, \pi/2]$  3. $[0, 2\pi]$  4. $[0, \pi]

b.) interval for $t$ in order to trace $r = \cos(5t)$ only once:
   (2) Circle one:
   1. $[0, \pi/3]$  2. $[0, \pi/2]$  3. $[0, 2\pi]$  4. $[0, \pi]

c.) interval for $t$ in order to trace $r = \sin(t/2)$ only once:
   (3) Circle one:
   1. $[0, 4\pi]$  2. $[0, 3\pi]$  3. $[0, 2\pi]$  4. $[0, \pi]

d.) Submit a print-out of your graphs
   (4) Attach your graph to the worksheet.

Exercise 2:

a.) Use MATLAB to plot $r = \sin(2t)$ and $\cos(2t)$ on the same graph.
   (5) Attach your graph to the worksheet.

b.) $\sin(2t) =
   (6) Circle one:
   1. $\cos(2t - \pi/3)$  2. $\cos(2t - \pi/4)$  3. $\cos(2t + \pi/4)$  4. $\cos(2t - \pi/2)$
“Polar Graphs”

Exercise 3:

a.) Use MATLAB to draw the graph of \( r = 6 - 4 \sin (t) \). Submit the graph
(7) Attach your graph to the worksheet.

b.) \( r = 6 - 4 \sin (t) \) is a
(8) Circle one:
1. rose 2. limacon 3. circle 4. cardioid

Exercise 4:

a.) Find the point of intersection for \( r = 8 \cos^2 (2t) \) and \( r = 4 \) where \( 0 < t < \pi/4 \)
(9) Circle one:
1. \( \pi/8 \) 2. \( \pi/6 \) 3. \( \pi/10 \) 4. \( \pi/12 \)

b. Find the area within 4 petals common to \( r = 8 \cos^2 2t \) and \( r = 4 \).
(10) Circle one:
1. \( 20\pi + 32 \) 2. \( 16\pi \) 3. \( \pi/4 \) 4. \( 20\pi - 32 \)