Due at the beginning of class on the day of the Final Exam

Direction: Solve the problems in this worksheet on separate sheets of paper. Write your solution neatly. Use standard size paper. Clearly label each problem, and include each problem in the correct order. No ragged edges. Staple multiple pages. At the top of the first page put your name, Math 2414, and the title of the worksheet.Show all work to justify your answer. Answer with insufficient work will receive no credit.

Problem 1: Find Area

Graph the region bounded by the given curves and find the area:

1. $r = 1 + \cos\theta$, $0 \leq \theta \leq \pi$
2. $r = \sin(4\theta)$, $0 \leq \theta \leq \pi/4$

Problem 2: Find Area of a region between 2 curves

Graph and find the area of the region that lies inside the first curve and outside the second curve:

1. $r = 1 - \sin\theta$ and $r = 1$.
2. $r = 3\cos\theta$ and $r = 1 + \cos\theta$

Problem 3: Find arc length

Find the length of the curve over the given interval:

1. $r = 8$, $0 \leq \theta \leq 2\pi$.
2. $r = 1 + \sin\theta$, $0 \leq \theta \leq 2\pi$
3. $r = 2\cos\theta$, $0 \leq \theta \leq \pi$
4. $r = \theta^2$, $0 \leq \theta \leq 2\pi$