

Math 102, Fall 2007: Practice Exam 3 for the Final Exam
Chapter 9 Questions

Instructions: This is a practice exam for the Chapter 9 questions on the final exam. You should use the previous exams to study for the other parts of the final. The final exam will be a three hour closed-book exam, and one third of the exam will be on Chapter 9. Calculators are not allowed and will not be necessary. Partial credit will be awarded for partially correct solutions, so we advise you to **show all work**.

We suggest that you take this practice exam under the conditions listed above for the final, giving yourself 60 minutes to do these questions. Once you are done, check your answers against the answer key provided, and make corrections as necessary. Please contact your instructor or one of the teaching assistants if you have any questions.

1. Sketch the polar curve $r = 1 + 2 \cos \theta$.
2. Find the area enclosed by the polar curve $r = -5 + 3 \cos 3\theta$.
3. Sketch the parametric curve

$$x(t) = \cot \pi t \quad y(t) = \tan \pi t \quad 0 < t < \frac{1}{2}$$

4. Find the area enclosed by the x -axis, the y -axis, and the parametric curve

$$x(t) = \frac{e^t - e^{-t}}{2} \quad y(t) = \left(\frac{2}{e^t + e^{-t}} \right)^2 \quad 0 < t < \infty$$

5. Find the arclength of the parametric curve

$$x(t) = \frac{t^3}{3} - 4t + 5 \quad y(t) = 2t^2 + 7 \quad 0 \leq t \leq 1$$