

Midterm II: Some problems for review

The exam will be taken at the Testing Center during 11/06 - 11/07. At the Testing Center, you go to Canvas and navigate to Midterm I in Week 11 module. You will be directed to WebAssign. It will ask you for an access code. The proctor will give you the code. Although all questions are automatically graded, you have an option to show your work (by typing in a box) so that you can earn some extra credit even if your final answer is incorrect.

The material covered is Section 8.1, 8.2, 9.1-9.5, 10.1-10.4. It is a closed book exam. You can bring the 2-sided cheat sheet handed in class. On one page are the the trigonometric identities cheat sheet. On the other page are some formulas about length/area of parametric/polar curves. Don't write anything on this cheat sheet. It will be collected after you finish the exam. A scientific calculator is allowed. Graphing/programmable/transmittable calculators are not allowed. Phones are not allowed. You should review the homework problems, worksheets, quizzes, examples given in the lectures. It is always a good idea to study for the exam with someone. Some problems to practice:

- 1) Find the length of the curve $y = x^{3/2}$ where $0 \leq x \leq 4$.
- 2) Find the surface area of the solid obtained by revolving the curve $y = x^3$, $0 \leq x \leq 2$, about the x -axis.
- 3) Determine if $y = \sqrt{x}$ is a solution of the differential equation $xy' + y = 0$.
- 4) Solve the differential equation $y' = y - x$.
- 5) Solve the differential equation $y'x = e^y$.
- 6) Use Euler's method with step size 0.1 to estimate $y(0.3)$, where $y(x)$ is the solution of the initial-value problem $y' = y + xy$, $y(0) = 1$.
- 7) Plot the point whose polar coordinates are given. Then find two other pairs of polar coordinates of this point, one with $r > 0$ and one with $r < 0$. Then find the Cartesian coordinates of the point.
 - (a) $(-2, 3\pi/2)$
 - (b) $(2, -11\pi/4)$