

Preparing for the Final

MATH 126 — Calculus II
Final Exam: Wednesday, Dec 11, 2024

Please print your name:

Bonus challenge. Let me know about any typos you spot in the posted solutions (or lecture sketches). Any mathematical typo, that is not yet fixed by the time you send it to me, is worth a bonus point.

Reminder. A nongraphing calculator (equivalent to the TI-30XIIS) is allowed on the exam (but not needed). No notes or further tools of any kind will be permitted on the final exam.

Problem 1. Go over all past quizzes!

To help you with that, there is a version of each quiz posted on our course website without solutions (of course, there are solutions, too).

Problem 2. Study the practice problems for the three midterm exams!

Problem 3. Retake the three midterm exams!

(A copy without solutions is available on our course website. Of course, you also find solutions there.)

Additional problems covering the material since the third midterm

Problem 4.

- What are the Cartesian coordinates of the point with polar coordinates $r = 3$, $\theta = \frac{\pi}{6}$?
- What are the polar coordinates of the points with Cartesian coordinates $(-2, 2)$ and $(2, -2)$?
- Sketch the region described by $2 \leq r \leq 4$, $-\frac{\pi}{2} \leq \theta \leq \frac{3\pi}{4}$.

Problem 5. Consider the parametric curve given by $x = t \cos(2\pi t)$, $y = t \sin(2\pi t)$ with parameter $t \in [0, 3]$.

- Make a rough sketch of the curve.
- Find the slope of the line tangent to the curve at the point corresponding to $t = \frac{1}{2}$.
- Setup an integral for the arc length of the curve. Simplify but don't evaluate the integral.

Problem 6.

- Write down the Taylor series for $7e^{-3x}$ at $x = 0$.
What is the radius of convergence of that series? What is the exact interval of convergence?
- Determine the Taylor series for $\int_0^x e^{-t^2/2} dt$ at $x = 0$.
What is the radius of convergence of that series? What is the exact interval of convergence?