

Final Exam: Some problems for review

You will take your Final exam at the regular classroom SCB 303 on Thursday, June 26, from 10 AM to 12:50 PM. You need to bring a laptop to do the exam on WebAssign. The material covered is Section 15.1-15.3, 15.6-15.9, and 16.1-16.5. There will be some questions for extra credit. These questions can be about anything you have learned from the beginning of the course.

It is a closed book exam. No notes or phones are allowed. You can use a scientific calculator but not graphing calculator. The exam is protected by a passcode which will be given to you at the time of the exam. You are not allowed to use any app on your laptop, even the calculator app. Your web browser must occupy the full screen at all time. The instructor will provide scratched papers for you. You will have two attempts. The higher score will be your final score. All questions will be automatically graded, so you will see your score when you finish your exam or when the time is up.

You should review the homework problems, quizzes, and examples given in the lectures. It is always a good idea to study for the exam with someone. Some additional problems to practice:

- 1) Use Green's theorem to evaluate $\int_C (y + e^{\sqrt{x}})dx + (2x + \cos(y^2))dy$ where C is the boundary of the region enclosed by the parabolas $y = x^2$ and $x = y^2$ and is negatively oriented.
- 2) Find the work done by the force field $F(x, y) = (2x + y, x)$ in moving an object from $P(1, 1)$ to $Q(4, 3)$.
- 3) Evaluate the line integral $\int_C \sin y \, dx + (x \cos y - \sin y)dy$ where C is the part of the graph of the function $y = 2 + \cos x$ from $(\pi, 1)$ to $(0, 3)$.
- 4) Use a suitable change of variables to evaluate the double integral $\iint_D (x + y)e^{x^2 - y^2} dA$ where D is the region enclosed by the lines $x - y = 0$, $x - y = 2$, $x + y = 0$, and $x + y = 3$.
- 5) Evaluate the volume of the solid that lies between the cylinders $x^2 + y^2 = 1$ and $x^2 + y^2 = 16$, above the xy -plane, and below the plane $z = y + 4$.