

MATH 126 C
Exam II
Winter 2019

Name _____ Student ID # _____

HONOR STATEMENT

“I affirm that my work upholds the highest standards of honesty and academic integrity at the University of Washington, and that I have neither given nor received any unauthorized assistance on this exam.”

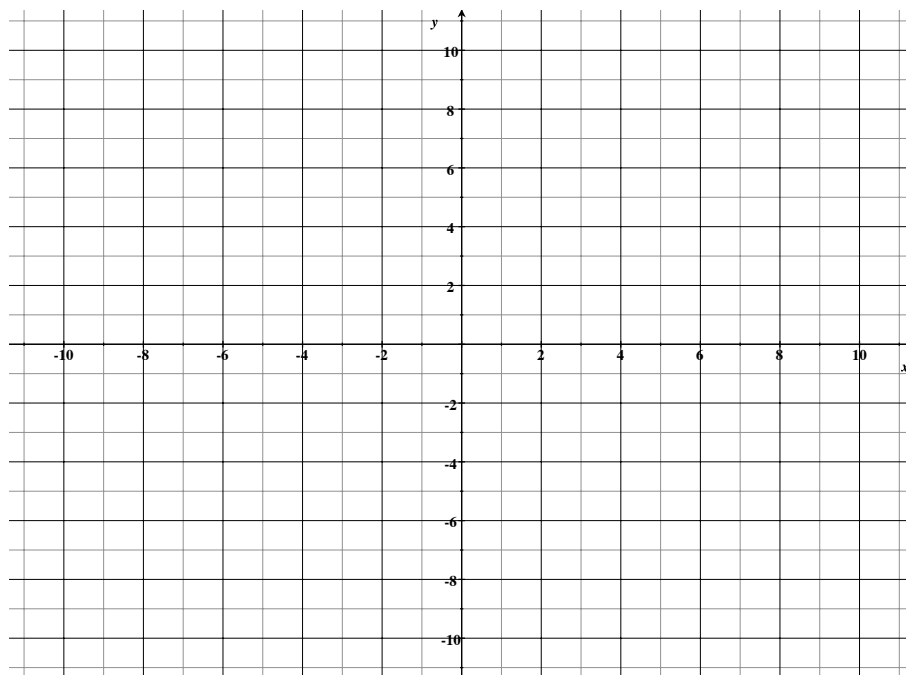
SIGNATURE: _____

- Your exam should consist of this cover sheet, followed by 5 problems. Check that you have a complete exam.
- Pace yourself. You have 50 minutes to complete the exam and there are 5 pages. Try not to spend more than about 10 minutes on each page.
- Unless otherwise indicated, **show all your work and justify your answers.**
- Unless otherwise indicated, your answers should be exact values rather than decimal approximations. (For example, $\frac{\pi}{4}$ is an exact answer and is preferable to its decimal approximation 0.7854.)
- You may use a **TI 30XII S** calculator and one 8.5×11-inch sheet of handwritten notes. **All other calculators, electronic devices, and sources are forbidden.**
- **Do not write within one centimeter of the edge of the page.**
- If you need more room, use the back of this cover sheet and the back of the last page and **tell your grader where to look for your solution.** If you need more room than that, ask your TA for extra paper and put your name on it.
- The use of headphones or earbuds during the exam is not permitted.
- There are multiple versions of the exam, you have signed an honor statement, and cheating is a hassle for everyone involved. **DO NOT CHEAT.**
- You are not allowed to use your phone for any reason during this exam. **Turn your phone off and put it away for the duration of the exam.**

GOOD LUCK!

**USE THIS PAGE IF YOU NEED MORE ROOM.
TELL YOUR GRADER WHERE TO FIND YOUR WORK.**

1. (8 points) Find, sketch, and shade the domain of $f(x, y) = \sqrt{100 - x^2 - y^2} + \ln(x - y)$.



2. (10 points) Use implicit differentiation to compute $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$:

$$\sin(x^2z) = 8ye^z.$$

3. (12 points) Find and classify all critical points of the function

$$f(x, y) = 3x - x^3 - 6xy^2.$$

4. (10 points) Evaluate

$$\int_1^2 \int_1^{x^2} \left(xe^y + \frac{1}{x^3} \right) dy dx.$$

5. (10 points) Let V be the volume of the solid that lies below the surface $z = xy$ and above the triangle in the xy -plane with vertices $(0, 0)$, $(0, 3)$, and $(3, 1)$.

YOU DO NOT NEED TO COMPUTE THE VOLUME.

Fill in the boxes below to give the iterated integrals one would need to evaluate in order to find the volume V . Show your work.

$$V = \int_{\boxed{}}^{\boxed{}} \int_{\boxed{}}^{\boxed{}} \boxed{} d\boxed{} d\boxed{}$$

**YOU DO NOT NEED TO COMPUTE THE VOLUME.
JUST FILL IN THE BOXES.**

**USE THIS PAGE IF YOU NEED MORE ROOM.
TELL YOUR GRADER WHERE TO FIND YOUR WORK.**