

This exam is worth 100 points and has 6 problems.

**Show all work and simplify your answers!** Answers with no justification will receive no points unless otherwise noted.

**Please begin each problem on a new page.**

**DO NOT** leave the exam until you have satisfactorily scanned and uploaded your exam to Gradescope.

You are taking this exam in a proctored and honor code enforced environment. **NO** calculators, cell phones, or other electronic devices or the internet are permitted. You are allowed one 8.5" × 11" crib sheet with writing on one side.

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0. At the top of the first page that you will be scanning and uploading to Gradescope, write the following statement and sign your name to it: "I will abide by the CU Boulder Honor Code on this exam." **F**

5. [2350/111622 (18 pts)] A friend of yours has built a cool art sculpture in the shape of the surface  $\frac{1}{2}x^2 - y^2 - \sqrt{3}z = 0$ . To protect it from