

Your Name:\_\_\_\_\_ Signature:\_\_\_\_\_

TA Name:\_\_\_\_\_ Drill Time:\_\_\_\_\_

## Quiz 2 (Take Home)

Math 2574: Calculus III

Due: In Drill on Tuesday, 2/4/20

**Instructions: CLEARLY SHOW ALL YOUR WORK.** Put a box around your final answer.

This quiz is due on **Tuesday, February 4**, at the beginning of your drill. Write your final solutions NEATLY on the sheets of paper below. FIRST, work out your solutions on scratch paper, and THEN write up your solutions *nicely* in the space provided. When you are finished writing up a POLISHED version of your final solutions, staple these pages together and make sure your information is properly filled-in at the top of this page. This quiz will be graded on a 0-1-2 scale. A zero represents little progress, 1 represents average progress, and 2 represents excellent progress towards the final answer. Each of your answers must be properly justified with supporting work. Remember, the *process and techniques* for finding the right answer are typically more important than the answer itself. It's all about context... **SO SHOW ALL YOUR WORK CLEARLY AND CONCISELY!**

1. A block is sitting on an inclined plane that forms a  $30^\circ$  angle with the positive  $x$ -axis. The force of gravity on the block is given by  $\mathbf{F} = \langle 0, -10 \rangle$ . Find the components of the gravitational force in the directions parallel to and normal to the plane.

2. Find an equation for the plane containing the point  $P = (0, 2, -2)$  that is parallel to the plane  $2x + y - z = 1$ .

3. Find the area of the triangle in  $\mathbb{R}^3$  whose vertices are the points

$$A = (3, 0, 1), \quad B = (1, 1, 0), \quad \text{and} \quad C = (0, 2, 3)$$

4. Find an equation for the plane containing points  $A, B, C$  from question 3.

5. Find parametric equations for the line that goes through the points  $A$  and  $B$  from question 3.