|              | MA 26100<br>EXAM 1 Form 01 |  |
|--------------|----------------------------|--|
|              | October 2, 2018            |  |
| NAME         | YOUR TA'S NAME             |  |
| STUDENT ID # | RECITATION TIME            |  |

Be sure the paper you are looking at right now is GREEN! Write the following in the TEST/QUIZ NUMBER boxes (and blacken in the appropriate spaces below the boxes): 01

You must use a  $\underline{\#2 \text{ pencil}}$  on the mark–sense sheet (answer sheet). On the mark–sense sheet, fill in your <u>TA</u>'s name and the <u>COURSE</u> number. Fill in your <u>NAME</u> and <u>STUDENT IDENTIFICATION NUMBER</u> and blacken in the appropriate spaces. Fill in your four-digit <u>SECTION NUMBER</u>. If you do not know your section number, ask your TA. Sign the mark–sense sheet.

There are **12** questions, each worth 8 points (you will automatically earn 4 point for taking the exam). Blacken in your choice of the correct answer in the spaces provided for questions 1–12. Do all your work in this exam booklet. Use the back of the test pages for scrap paper. Turn in both the scantron and the exam booklet when you are finished.

If you finish the exam before 8:50, you may leave the room after turning in the scantron sheet and the exam booklet. You may not leave the room before 8:20. <u>If you don't finish before 8:50, you MUST REMAIN SEATED</u> until your TA comes and collects your scantron sheet and your exam booklet.

## EXAM POLICIES

- 1. Students may not open the exam until instructed to do so.
- 2. Students must obey the orders and requests by all proctors, TAs, and lecturers.
- 3. No student may leave in the first 20 min or in the last 10 min of the exam.
- 4. Books, notes, calculators, or any electronic devices are not allowed on the exam, and they should not even be in sight in the exam room. Students may not look at anybody else's test, and may not communicate with anybody else except, if they have a question, with their TA or lecturer.
- 5. After time is called, the students have to put down all writing instruments and remain in their seats, while the TAs will collect the scantrons and the exams.
- 6. Any violation of these rules and any act of academic dishonesty may result in severe penalties. Additionally, all violators will be reported to the Office of the Dean of Students.

I have read and understand the exam rules stated above:

STUDENT NAME:

STUDENT SIGNATURE:

1. A line l pisses through the point 
$$A(1, -2, 1)$$
 and  $B(2, 3, -1)$ . At what point does this  
ine intersect with the *xy*-plane  $V = \langle 2, 3, -1, -2, 1, -2, 1 \rangle = \langle 1, 5, -2 \rangle$   
 $V = \langle 2, 3, -1, -2, 1, -2, 1 \rangle = \langle 1, 5, -2 \rangle$   
 $V = \langle 2, 3, -1, -2, 1, -2, 1 \rangle = \langle 1, 5, -2 \rangle$   
 $V = \langle 2, 3, -1, -2, 1, -2, 1 \rangle = \langle 1, 5, -2 \rangle$   
 $V = \langle 2, 3, -1, -2, 1 \rangle = \langle 1, 5, -2 \rangle$   
 $A \cdot (\frac{3}{2}, -\frac{1}{2}, 0) = \langle 1, 1, -2, 1 \rangle$   
 $A \cdot (\frac{3}{2}, -\frac{1}{2}, 0) = \langle 1, 1, -2, 1 \rangle$   
 $A \cdot (\frac{3}{2}, -\frac{1}{2}, 0) = \langle 2, 1, 1, 2 \rangle$   
 $B \cdot (\frac{5}{2}, -\frac{1}{2}, 0) = \langle 2, 2, 2 \rangle$   
 $B \cdot (\frac{5}{2}, -\frac{1}{2}, 0) = \langle 2, 2, 2 \rangle$   
 $(\frac{3}{2}, -\frac{1}{2}, 0) = \langle 2, 2, 2 \rangle$   
 $(\frac{3}{2}, -\frac{1}{2}, 0) = \langle 2, 2, 2 \rangle$ 

2. Given two planes x + y + z = 1 and x - 2y + 2z = 4. Which equations describe the parametric equations of the line of intersections of those two planes?

$$\begin{array}{c} \chi + \chi = 1 - \frac{1}{2} \\ \chi - 2 \chi = 4 - 2 \frac{1}{2} \\ 3 \chi = -3 + \frac{1}{2} \\ A. \ x = 2 + 4t, \ y = 1 - t, \ z = -3t; \\ B. \ x = 2 + 4t, \ y = -1 - t, \ z = -3t; \\ C. \ x = 2 + t, \ y = -1 - t, \ z = -2t; \\ D. \ x = 2 + 3t, \ y = -1 - t, \ z = -2t; \\ E. \ x = 2 + 4t, \ y = 2 - t, \ z = -3t; \\ (\chi = 1 - \frac{1}{2} - \frac{1}{3} - \frac{1}{3}, \ \chi = 2 - \frac{1}{3} + \frac{1}{$$

- 3. What does the equation  $x^2 = 2y^2 + z^2 = -1$  represent as surface in  $\mathbb{R}^3$ ?
  - A. elliptic paraboloid
  - B. hyperboloid of one sheet
  - C. hyperboloid of two sheets
  - D. hyperbolic paraboloid
  - E. elliptic cone





Find its speed at t = 1.

A.  $\sqrt{2\pi}$ B. 5 C.  $3\pi$ D.  $\sqrt{6}$ 

- D. V0
- E.  $\tan(1)$

$$z = f(x, y) \qquad z = f(a, b) + \nabla f(a, b) - \langle x - a, y - b \rangle$$
9. The tangent plane to the surface  

$$f(b) = \frac{1}{2} + \frac$$

$$\begin{aligned} f(x, y) &= \int (x(u,v), y(v,v)) & f & g & f_{x} \end{pmatrix} \begin{pmatrix} f_{y} & f_{y} & f_{y} \end{pmatrix} \begin{pmatrix} y & y & y \\ y & y & y \end{pmatrix} \\ f(x) & (u,v) = (1,0) \\ f(x) & (u,v) = (1,0) \\ g(y) & ($$

11. Find the directional derivative of the function  $f(x, y, z) = x^2y + y^2z$  at (1, 2, 3) in the direction toward the point (3, 1, 5).



- A. A local maximum at (2,2) and a saddle point at (-3,0)
- B. A local minimum at (2, 2) and a saddle point at (-3, 0)
- C. A local maximum at (2,2) and a local minimum at (-3,0)
- D. A local minimum at (2,2) and a local maximum at (-3,0)
- E. A saddle point at (2, 2) and a local minimum at (-3, 0)