MATH 261 EXAM I SPRING 2016

NAME:_____
CSU ID:_____

SECTION NUMBER: _____

[Include your instructor's name if you cannot remember your section number.]

You may NOT use calculators or any references. Show work to receive full credit.

GOOD LUCK !!!

[If formulas are provided (typically only on exam 3 and the final), they'll be either here or on page 2 of the exam.]

Problem	Points	Score
1	12	
2	8	
3	20	
4	22	
5	18	
6	20	
Total	100	

[Exams 1 and 2 typically have 6 problems; 3 has 5; and the final has 9.]

1. (12 pts; 1 pt per part) Circle **all** correct statements.

(a) The dot product of two vectors $(\mathbf{u} \cdot \mathbf{v})$ is

(i) a number (ii) a vector

(b) The cross product of two vectors $(\mathbf{u} \times \mathbf{v})$ is

(i) a number (ii) a vector

(c) For any vector $\mathbf{v}$, $|\mathbf{v}|$ is

(i) 1 (ii) $\sqrt{\mathbf{v} \cdot \mathbf{v}}$

(iii) the magnitude of $\mathbf{v}$ (iv) $\mathbf{v} \cdot \mathbf{v}$

(d) **P1** is a plane given by $2x + 3y + z = 5$,
P2 is a plane given by $3x - 2y = 2$, and
L is a line given by $\mathbf{r}(t) = \langle t, 1 + t, 2 - 5t \rangle$.

(i) **P1** and **P2** are parallel (ii) **P1** and **L** intersect

(iii) **P2** and **L** intersect (iv) **L** is the intersection of **P1** and **P2**

[Multiple choice questions like this sometimes appear on Exam 1 and the final, but they aren't the main problem type.]

2. (8 pts) Determine the distance from point $(2, 2, 3)$ to the plane $x + 2y + 2z = 4$.

[This is much more the typical question type: short statement; lots of space for your response. Be sure to write as legibly as possible and to clearly mark your answer!]

3. (20 pts; 10 pts per part)

(a) The line given by $\mathbf{r}(t) = \langle 1 + t, 2 - t, 3 + 2t \rangle$ intersects the plane given by $x + y + z = 10$ in a point. Find the point of intersection.

(b) Find a vector parallel to the line of intersection of the planes given by $2x + z = 5$ and $x + y - z = 4$.

[For multipart questions like this, be sure to read very carefully. The parts are sometimes related (i.e., you might use stuff from part (a) in part (b)), but they are sometimes totally distinct. We make this as clear as we can, but please be sure to read carefully.]

[This exam had 3 more pages, 1 problem per page. See the practice exams for more of these problems.]