

MA 2733

Worksheet 10 – November 6, 2014

Name \_\_\_\_\_

1. Find a unit normal vector (that is, a normal vector that is also a unit vector) to the plane containing the points  $(2, 1, 1)$ ,  $(1, 1, 1)$ , and  $(1, 3, 1)$ .

2. How can you tell if a plane is parallel to the plane  $3x - y + z = 1$ ?

3. Show that if  $\vec{v} + \vec{u} + \vec{w} = \vec{0}$ , then  $\vec{v} \times \vec{u} = \vec{u} \times \vec{w}$ .

4. For each of the following sets of points, determine whether the points lie all on a line, all on a plane, or neither:

(a)  $(0, 0, 0)$ ,  $(1, 2, 3)$ ,  $(3, 2, 1)$ ,  $(1, 1, 1)$

(b)  $(1, 1, 1)$ ,  $(2, 1, 1)$ ,  $(3, 1, 1)$ ,  $(4, 1, 1)$

(c)  $(1, 0, 1)$ ,  $(2, 2, 4)$ ,  $(4, 2, 2)$ ,  $(2, 1, 2)$