

Math 222, Quiz 10

Name:

Instructions: Answer the following questions fully, explaining your work.

1) Find the volume of the parallelepiped determined by the following three vectors:

$$\mathbf{u} = \langle 1, -1, 1 \rangle, \mathbf{v} = \langle 2, 1, -2 \rangle, \mathbf{w} = \langle -1, 2, -1 \rangle$$

Just take  $\mathbf{u} \times \mathbf{v} \cdot \mathbf{w}$ . You should get answer of 4.

2) Find the equation for the plane through the points  $(2, 4, 5)$ ,  $(2, 0, 2)$ , and  $(0, -2, 1)$ .

Find two vectors that lie in the plane. Then take their cross product. For example, I found a cross product of  $\langle -2, 6, -8 \rangle$ , which gives me a plane equation of  $-2x + 6y - 8z = A$ . Plug in any of the points to find that  $A = -20$ , so the equation is  $-2x + 6y - 8z = -20$ .

Bonus (1pt): What is the second longest running animated series in television history?

King of the Hill.