Math 2401 (K1-K3)
1/14/2015

Quiz 1

1. Suppose that $\|\mathbf{u}\| = 3$ and $\|\mathbf{v}\| = 2$. Find $\mathbf{u} \cdot \mathbf{v}$, given that the angle between the two vectors is $\frac{\pi}{4}$.

2. Given the points:

$$P(1, 2, 3),$$
$$Q(1, 4, 3 + \sqrt{5})$$

a). Express the vector $\overrightarrow{PQ}$ in component form.

b). Find the length of $\overrightarrow{PQ}$.

c). Find the direction of the vector $\overrightarrow{PQ}$.

3. Given the vectors:

$$\mathbf{u} = \langle 3, 1, -2 \rangle,$$
$$\mathbf{v} = \langle -4, 0, 1 \rangle$$

find $\mathbf{u} \times \mathbf{v}$ and $\mathbf{v} \times \mathbf{u}$.