

Quiz 1, Calculus III

Fall 2012

Name: _____

1. (4 points) Find the equation of the plane that passes through the points $(3, -1, 2)$, $(2, 1, 5)$, and $(1, -2, -2)$.

2. (3 points) For each of the following, state if the expression gives a vector, a scalar, or does not exist. Assume that \mathbf{u} , \mathbf{v} , and \mathbf{w} are all nonzero vectors.

(i) $(\mathbf{u} \times \mathbf{v}) \times \mathbf{w}$

(ii) $(\mathbf{u} \cdot \mathbf{v}) \cdot \mathbf{w}$

(iii) $(\mathbf{u} \cdot \mathbf{v})\mathbf{w}$

(iv) $(\mathbf{u} \cdot \mathbf{v}) \times \mathbf{w}$

(v) $(\mathbf{u} \times \mathbf{v}) \cdot \mathbf{w}$

3. (3 points) Let $\mathbf{u} = \langle 1, 0, 2 \rangle$, $\mathbf{v} = \langle 3, 1, -2 \rangle$, and $\mathbf{w} = \langle 0, 4, 1 \rangle$. Calculate numbers (iv) and (v) from question 2, assuming they exist (Hint: one of them exists and the other does not).