Name: _____

Quiz 8

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. §3.2 #TF *(2 marks)* Determine whether the statement is true or false, and justify your answer.
For all vectors $\vec{v}$, $\vec{v}$, and $\vec{w}$ in $\mathbb{R}^n$, we have $||\vec{u}+\vec{v}+\vec{w}|| \leq ||\vec{u}|| + ||\vec{v}|| + ||\vec{w}||$.

Question 2. §3.2 #TF *(2 marks)* Determine whether the statement is true or false, and justify your answer.
If $\vec{u} \cdot \vec{v} = 0$, then either $\vec{u} = \vec{0}$ or $\vec{v} = \vec{0}$.

Question 3. §3.3 #TF *(2 marks)* Determine whether the statement is true or false, and justify your answer.
If the relationship $\text{proj}_{\vec{a}}\vec{u} = \text{proj}_{\vec{a}}\vec{v}$ holds for some nonzero vector $\vec{a}$, then $\vec{u} = \vec{v}$.

Question 4. §3.3 #37 *(4 marks)* Find the distance between the given parallel planes: $2x - y - z = 5$ and $-4x + 2y + 2z = 12$