Name: _____
Student ID: _____

Quiz 7

This quiz is graded out of 10 marks. No books, 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. Let $\mathbf{u} = (3,2,-1)$, $\mathbf{v} = (3,-3,-3)$, $\mathbf{w} = (2,-2,-3)$.

a. *(3 marks)* Find the scalar triple product of $\mathbf{u}$, $\mathbf{v}$, $\mathbf{w}$.

b. *(1 mark)* Find the volume of the parallelepiped with sides $\mathbf{u}$, $\mathbf{v}$, $\mathbf{w}$.

Question 2. *(4 marks)* Find the area of the parallelogram determined by $\mathbf{x} = (2,-3,3)$ and $\mathbf{y} = (-2,2,-3)$.

Question 3. *(2 marks)* Find a vector $\mathbf{v}$ that is orthogonal to the vector $\mathbf{u} = (1,-6,-2)$.