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. *(4 marks)* Let $\mathbf{u} = (2,3,-2)$, $\mathbf{v} = (3,-1,-1)$, $\mathbf{w} = (2,-1,-3)$. Find the volume of the parallelepiped with sides $\mathbf{u}$, $\mathbf{v}$, $\mathbf{w}$.

Question 2.

a. *(3 marks)* Find a vector that is orthogonal to both $\mathbf{x} = (3,-2,1)$ and $\mathbf{y} = (-1,2,-3)$.

b. *(1 marks)* Find the area of the parallelogram determined by $\mathbf{x}$ and $\mathbf{y}$.

Question 3. *(2 marks)* Suppose that $\mathbf{u} \cdot (\mathbf{v} \times \mathbf{w}) = 17$ then find $(\mathbf{w} \times \mathbf{v}) \cdot \mathbf{u}$ and justify.