Name: _____

Student ID: _____

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. §3.4 *(5 marks)* Find the general solution to the linear system and confirm that the row vectors of the coefficient matrix are orthogonal to the solution vectors.

$$x_1 + x_2 + x_3 = 0$$
$$2x_1 + 2x_2 + 2x_3 = 0$$
$$3x_1 + 3x_2 + 3x_3 = 0$$

Question 2. 5.16 *(5 marks)* Find the equation of the plane passing through $A(2,0,5)$ and $B(0,2,-1)$ and orthogonal to the plane $x + 3y - z = 7$.

Bonus Question.[1] *(5 marks)* Suppose $\vec{u}$ and $\vec{v}$ are vectors in $\mathbb{R}^n$ such that $||\vec{u}|| = 3$, $||\vec{v}|| = 5$, and $||\vec{u} + \vec{v}|| = 7$. Find the angle between $\vec{u}$ and $\vec{v}$.

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[1] From a John Abbott final examination