Dawson College: **Linear Algebra** (SCIENCE): 201-NYC-05-S1: Winter 2023: **Quiz 12** name: _____

Books, watches, notes or cell phones are **not** allowed. The **only** calculators allowed are the Sharp EL-531**. You **must** show all your work, the correct answer is worth 1 mark the remaining marks are given for the work.

Question 1. *(5 marks)* Consider the vectors in $\mathbb{R}^3$: $\mathbf{u}(\theta) = (\cos\theta, \sin\theta, 0)$ and $\mathbf{v} = (1,0,1)$. Find all the values of the angle θ in $[0, 2\pi)$ for which the parallelepiped spanned by $\mathbf{u}(\theta)$, $\mathbf{v}$ and $\mathbf{u}(\theta) \times \mathbf{v}$ has volume $V = 2$.

Question 2. *(5 marks)* Given the lines $L_1 : \begin{cases} x = 7 + 2s \\ y = 1 \\ z = 6 + s \end{cases}$ and $L_2 : \begin{cases} x = 5 - t \\ y = -1 - t \\ z = -6 + t \end{cases}$, find the parametric equations of the line that intersects both L_1 and L_2 at right angles.