Dawson College: **Linear Algebra** (SCIENCE): 201-NYC-05-S3: Winter 2015

Name: _____
Student ID: _____

Quiz 10

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. #5.23 Given:

$$\begin{array}{lrcll} \mathscr{L}_1\colon & (x,y,z) & = & (2,1,3)+t(4,2,-3) & t\in\mathbb{R} \\ \mathscr{L}_2\colon & (x,y,z) & = & (3,1,2)+t(1,-1,-2) & t\in\mathbb{R} \end{array}$$

a. *(5 marks)* Find the point on each line which is closest to the other.

b. *(2 marks)* Find the distance between the lines.

Question 2. *(3 marks)* §3.5 #34 Prove: If θ is the angle between $\vec{u}$ and $\vec{v}$ and $\vec{u}\cdot\vec{v}\neq 0$, then

$$\tan\theta = \frac{||\vec{u}\times\vec{v}||}{\vec{u}\cdot\vec{v}}$$