Dawson College: **Linear Algebra**: 201-105-05: Fall 2016

Name: _____

For each part, show all your work and include a sketch.

Question 1. Given the two lines: $\mathscr{L}_1 : (x,y,z) = (1,0,-2)+t(1,3,2), \quad t \in \mathbb{R}$ and $\mathscr{L}_2 : (x,y,z) = (1,2,-2)+t(-2,-6,-4), \quad t \in \mathbb{R}$.

a. Find the parametric and general equation of the plane that contains $\mathscr{L}_1$ and $\mathscr{L}_2$.

b. Using projections find the distance from $\mathscr{L}_1$ to $\mathscr{L}_2$.

c. Find the equation of the line which passes through $P(1,1,1)$ and is orthogonal to the direction of both $\mathscr{L}_1$ and $\mathscr{L}_2$.

d. Find the angle between the plane found in part a. and the plane $\mathscr{P} : (x,y,z) = (1,2,0) + s(2,-1,1) + t(5,-1,6), \quad s,t \in \mathbb{R}$.