## Name:

- 2. Let P(1,2,3), Q(1,1,1) and R(2,2,0) be points in  $\mathbb{R}^3$ 
  - (a) Find the vectors  $\overrightarrow{PQ}$  and  $\overrightarrow{PR}$ .
  - (b) Write the parametric equation of the plane containing the points P, Q and R.
  - (c) Write the standard equation of the plane containing the points P, Q and R.
- 3. Let  $\mathbf{v_1} = (1, 2, 3, 4)$ ,  $\mathbf{v_2} = (1, 0, 0, 0)$  and  $\mathbf{v_3} = (0, 3, 0, -1)$  be vectors in  $\mathbb{R}^4$ 
  - (a) Write the parametric equation of the plane containing these vectors and the origin.
  - (b) Note the vector (0, 3, -14, 9) is perpandicular to the vectors  $\mathbf{v_1}$ ,  $\mathbf{v_2}$  and  $\mathbf{v_3}$ . Show this.
  - (c) Write the standard equation of the plane from Problem 3a.
  - (d) What does this question have to do with Problem 1?