Name: _____

Circle your TA ***and*** the time of your ***recitation***: **DH CM 8 9 10 11**

Task Master: _____ **Cynic:** _____ **Recorder:** _____

MTH 254 **LINES & PLANES** Fall 2010

Working in small groups (3 or 4 people), solve as many of the problems below as possible. Try to resolve questions within the group before asking for help. Each group member should then write up the solutions in their own words; Show your work! Full credit will only be given if your answer is supported by calculations and/or explanations as appropriate.

1. Consider the parametric line $\vec{\boldsymbol{r}} = (5-2u)\,\hat{\boldsymbol{\imath}} + (3+7u)\,\hat{\boldsymbol{\jmath}} + 4u\,\hat{\boldsymbol{k}}$ and the plane $ax+by+cz=d$.

(a) Find values of the constants a, b, c, d such that the plane is perpendicular to the line.

(b) Find (other) values of the constants a, b, c, d such that the line lies in the plane.
In each case, there are many possible answers.