DIRECTIONS   To receive full credit, you must provide complete legible solutions to the following problems in the space provided. No Attached papers. Transfer all your answers to the space provided.

1.   Find a parametric equations and a vector equation for   Ans_____
        the line through the points $(3,2,-1),\ (1,1,-2)$

2.   Find the equation, in vector form, of the line perpendicular   Ans_____
        to the given plane and passing through the point.
        $2x - y + z = 4,\ (1,2,4)$

3.   Find a vector equation for the **line segment** from   Ans_____
        $(4,-1,4)$ to $(6,7,3)$.

4.   Find an equation of the plane that contains the three points Ans_____
      $(1,2,1,\ (2,-1,1),\ (2,3,2)$

5.   Find an equation of the plane that passes through the point Ans_____
      $(3,\ 4,\ 5)$ and contains the line

      $x = 5t,\ y = 3+t,\ z = 4-t$

6.   Find the distance from the point to the given line.   Ans_____
      by using a vector perpendicular to the line.

      $(5,1,-1);\quad x = 1+t,\ y = 3-2t,\ z = 3-3t$

7.   Find the distance from the point to the given plane,   Ans_____
      by using a the projection of a vector through the
      point on to a normal to the plane.

      $(1,-3,2),\quad 3x+2y+6z = 5$