

1. Find the equation of the line.

(a) The line going thru  $(5,2,-1)$  and  $(1,-2,3)$

(b) The line is parallel to the line  $x = -1 + 2t$ ,  $y = t$ ,  $z = -t + 1$  and has the point  $(-1,2,3)$

2. Is the line thru  $(4,1,-1)$  and  $(2,5,3)$  parallel or perpendicular to the line thru  $(-3,2,0)$  and  $(5,1,4)$ ?

3. Find the equation of the plane.

(a) The plane thru the origin and the points  $(2,-4,6)$  and  $(1,3,-1)$ .

(b) The plane thru the point  $(1,-1,2)$  and perpendicular to the vector  $\langle 1,-2,1 \rangle$ .

(c) The plane thru the points  $(0,1,1)$ ,  $(1,0,1)$  and  $(1,1,0)$ .

(d) The plane thru the point  $(1,2,0)$  and parallel to the plane  $x - 2y + 3z = 1$ .

(e) The plane thru the point  $(6,0,-2)$  and contains the line  $x = 4 - 2t$ ,  $y = 3 + 5t$ ,  $z = -7 + 4t$ .