## Answer on Question #45088 – Analytic Geometry

## Task:

Obtain the equation of the plane passing through the line (x-1)/2 = -(y+1)/1 = (z-3)/4 and

which is perpendicular to the plane x+2y+z=4.

## Solution:

As the plane is passing through the line (x-1)/2 = -(y+1)/1 = (z-3)/4, so the vector (2,-1,4) is parallel to the plane. Since, our plane is perpendicular to the plane x+2y+z=4, than the vector (1,2,1) is also parallel to our plane. It is easily seen that the point (3,-2,7) belongs to line

(x-1)/2 = -(y+1)/1 = (z-3)/4. Thus, our plane contains vectors (x-3, y+2, z-7), (1, 2, 1), (2, -1, 4). The equation of plane can be found from the condition that three vectors are coplanar, which yields the determinant of the following matrix is zero.

х	-	3	у	+	2	Z	-	7
1			2			1		
2			-		1	4		

=(x-3)(8+1)-(y+2)(4-2)+(z-7)(-1-4)=9x-2y-5z+4=0.

So, the equation of our plane is 9x-2y-5z+4=0

Answer: 9x-2y-5z+4=0.