

Calc 3 HW: Planes + Intersections

Note Title

2/7/2013

① Find the scalar equation for the following planes

a) Through $P(-1, 0, 1)$, $Q(2, 3, 1)$, $R(1, 1, 0)$

b) Through origin and parallel to $x + y + z = 15$

c) Through point $P(-2, 1, -1)$ and containing the line $l(t) = \langle 1, 3, -2 \rangle + t \langle 3, 2, 1 \rangle$

② Is $P(0, 3, -2)$ on the plane $5x + 6y + 9z = 0$? How about $l(t) = \langle 1, 3, -2 \rangle + t \langle 1, 1, 1 \rangle$?

③ Find the point of intersection of the lines $l_1(t) = \langle 1, 1, 0 \rangle + t \langle 1, -1, 2 \rangle$ and $l_2(s) = \langle 2, 0, 2 \rangle + s \langle -1, 1, 0 \rangle$. Then find the equation of the plane containing both lines.

④ Which of these planes are parallel:

plane₁: $4x - 2y + 6z = 3$

plane₂: $4x - 2y - 2z = 6$

plane₃: $-6x + 3y - 9z = 5$

plane₄: $z = 2x - y - 9$

⑤ Where does the line through $(1, 0, 1)$ and $(4, -2, 2)$ intersect the plane $x + y + z = 6$?

⑥ Find equation of a plane with x -intercept A , y -intercept B , and z -intercept C .

⑦ Equation of line through $(1, 2, 6)$ and perpendicular to the plane $x + 3y + z = 5$