① Find the scalar equation for the following planes

  a) Through $P(-4,0,1), Q(2,3,1), R(1,1,0)$

  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 $l(t) = \langle 1,3,-2 \rangle + t \langle 4,4,1 \rangle$?

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: $4x - 2y + 6z = 3$ plane₃: $4x - 2y - 2z = 6$

  plane₂: $-6x + 3y - 9z = 5$ plane₄: $z = 2x - y - 3$

⑤ Where does the line through $(4,0,1)$ 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 $(1,0,6)$ and perpendicular
  to the plane $x + 3y + z = 5$

⑧ Find line of intersection between planes
  $x + y + z = 1$ and $x - 2y + 3z = 1$