Problem 1

Give the vector equation AND parametric equations of the line that passes through the points $(-1, 0, 4)$ and $(3, -4, 2)$.

Problem 2

Parametrize the line segment which joins the points $(-2, 3, 7)$ and $(1, 1, -3)$.

Problem 3

A dragonfly at the origin flies (in a straight line) in the direction $(1, 2, 3)$ at a rate of $4m/s$. Where is the dragonfly 6 seconds later?

Problem 4

Find an equation of the plane perpendicular to the vector $n = 2i + 3j - 1k$ that also contains the point $(3, 2, 1)$.

Problem 5

Find an equation of the plane containing the points $(2, 1, 3)$, $(4, 2, 1)$ and $(1, 0, 1)$.

Problem 6

Find a vector parallel to the line formed by the intersection of the planes $2x-3y+7z=1$ and $-x+y+4z=10$.

Problem 7

Find the point on the plane $x+y+z=3$ that intersects the line given by

$$x=2+3t, \quad y=-t, \quad z=4+2t$$

then find the distance between the plane and the the point on the line when $t=1$.