## 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 $4 \mathrm{~m} / \mathrm{s}$. Where is the dragonfly 6 seconds later?

## Problem 4

Find an equation of the plane perpendicular to the vector $n=2 i+3 j-1 k$ 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 $2 x-3 y+7 z=1$ and $-x+y+4 z=10$.

## Problem 7

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

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

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

