**9F Part 2 Perpendicular Distances with Lines & Planes**



1. Find the perpendicular distance from the point with coordinates $(3,2,-1)$ to the plane with equation $2x-3y+z=5$
2. The plane $Π$ has equation:

$$r.\left(i+2j+2k\right)=5$$

The point $P$ has coordinates:

$$(1,3,-2)$$

1. Find the shortest distance between $P$ and $Π$
2. The point $Q$ is a reflection of $P$ in $Π$. Find the coordinates of $Q$.
3. The line $l\_{1}$ has equation:

$$\frac{x-2}{2}=\frac{y-4}{-2}=\frac{z+6}{1}$$

The plane $Π$ has equation:

$$2x-3y+z=8$$

The line $l\_{2}$ is a reflection of $l\_{1}$ in the plane $Π$. Find a vector equation of the line $l\_{2}$.