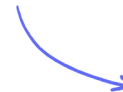


# 6.1 Vector Lines

6.1.1 Equations of Lines in 3D / 6.1.2 Pairs of Lines in 3D / 6.1.3 Angle between Lines / 6.1.4 Shortest Distances - Lines

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Total Marks

/6

**1 (a)** The line  $l_1$  has equation

$$\frac{x-1}{2} = \frac{y+1}{-1} = \frac{z-4}{3}$$

The line  $l_2$  has equation

$$\mathbf{r} = \mathbf{i} + 3\mathbf{k} + t(\mathbf{i} - \mathbf{j} + 2\mathbf{k})$$

where  $t$  is a scalar parameter.

a) Show that  $l_1$  and  $l_2$  lie in the same plane.

**(3 marks)**

**(b)** Find, to the nearest degree, the acute angle between  $l_1$  and  $l_2$

**(3 marks)**