

Equations of Lines (Revisited)

Ex 2

Find the equation of a line (in all 3 forms) containing the points A(1,3,-1) and B(2,5,0).

$$\overrightarrow{AB} = \begin{pmatrix} 1 \\ 2 \\ 1 \end{pmatrix} \quad A(1,3,-1)$$

$$r = \begin{pmatrix} 1 \\ 3 \\ -1 \end{pmatrix} + \alpha \begin{pmatrix} 1 \\ 2 \\ 1 \end{pmatrix} \quad \text{Vector Eqn}$$

$$\begin{aligned} x &= 1 + \alpha \\ y &= 3 + 2\alpha \\ z &= -1 + \alpha \end{aligned} \quad \text{Parametric Eqns}$$

$$\alpha = x - 1 = \frac{y - 3}{2} = z + 1 \quad \text{Cartesian Eqns}$$

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Ex 3

The Cartesian form of line l is given by the equations:

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

$$\frac{x+2}{3} = \frac{1-y}{2} = 2z-1 \quad \text{Cartesian Eqns}$$

$$\begin{aligned} x &= -2 + 3\alpha \\ y &= 1 - 2\alpha \\ z &= \frac{1}{2} + \frac{1}{2}\alpha \end{aligned} \quad \text{Parametric Eqns}$$

$$r = \begin{pmatrix} -2 \\ 1 \\ 1/2 \end{pmatrix} + \alpha \begin{pmatrix} 3 \\ -2 \\ 1/2 \end{pmatrix} \quad \text{Vector Eqn}$$

IB Math HL1
HW Check Monday 3/21
 11F p.572 #1-6
 11G p.578 #1-5
 11H p.583 #1-5