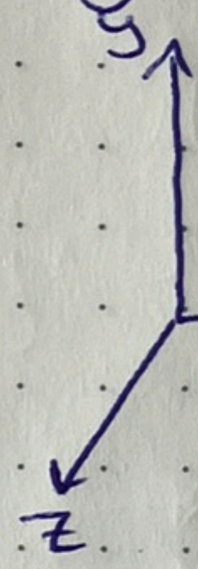
2024-02-18 UN

How do you join points to make a line?



$+P_2\,(1,2,0) = e_{032} + 2e_{013} + e_{123}$

$(1,0,0) = e_{032} + e_{123}$

Line $= \star(\star P_1 \wedge \star P_2) = P_1 \vee P_2$

$\star$: dual, $\wedge$: meet, $\vee$: join

$= \star(\cancel{(e_1 + 2e_2 + e_0) \wedge (}$
$(e_1 + e_0) \wedge (e_1 + 2e_2 + e_0))$

$= \star(2e_{12} + \cancel{e_{10}} + \cancel{e_{01}} + 2e_{02})$

$= \star(2e_{12} + 2e_{02})$

$= 2e_{03} + 2e_{31}$

In Plücker coords Line $= [(0,2,0), (0,0,2)]$
$= \underline{[(0,1,0), (0,0,1)]}$

The original question has

Plücker coords $= [\vec{P_1}\text{ to }\vec{P_2}, \vec{P_1} \times \vec{P_2}]$

$\vec{P_1}\text{ to }\vec{P_2} = \vec{P_2} - \vec{P_1} = (0,2,0)$

$\vec{P_1} \times \vec{P_2} = \begin{vmatrix} \hat{\imath} & \hat{\jmath} & \hat{k} \\ 1 & 0 & 0 \\ 1 & 2 & 0 \end{vmatrix} = \hat{\imath}(0) - \hat{\jmath}(0) + \hat{k}(2)$

$= (0,0,2)$

Original Line $= [(0,2,0), (0,0,2)]$

$= \underline{[(0,1,0), (0,0,1)]}$

It's a match!