Exit Slip #1
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1. $\frac{x-1}{2} = \frac{y-2}{3} = \frac{z+1}{p}$

$x = 1 + 2t$

$y = 2 + 3t$

$z = -1 + pt$

$(3, 5, 2)$

$3 = 1 + 2t \rightarrow t = 1$

$2 = -1 + p$

$\boxed{3 = p}$

2a. $x = 3 + 4t$

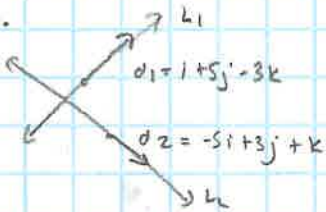
$y = -4 + 9t$

$z = 7 - 5t$

2b. $\frac{x-3}{4} = \frac{y+4}{9} = \frac{z-7}{-5}$

2c. $\vec{r} = \begin{pmatrix} 3 \\ -4 \\ 7 \end{pmatrix} + \lambda \begin{pmatrix} 4 \\ 9 \\ -5 \end{pmatrix}$

3.



$\cos\theta = \frac{d_1 \cdot d_2}{|d_1||d_2|}$

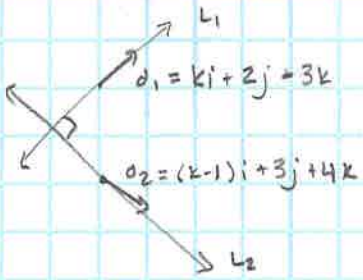
$\cos\theta = \frac{(1)(-5) + (5)(3) + (-3)(1)}{\sqrt{1+25+9} \cdot \sqrt{25+9+1}}$

$\cos\theta = \frac{7}{35}$

$\theta = \arccos\left(\frac{7}{35}\right)$

$= \boxed{78.1^\circ}$ 78.5°

4.



$d_1 \cdot d_2 = 0$

$(k)(k-1) + (2)(3) + (-3)(4) = 0$

$k^2 - k - 6 = 0$

$(k-3)(k+2) = 0$

$\boxed{k = 3}$
$\boxed{k = -2}$

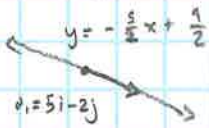
5. $\frac{2}{5} \rightarrow -\frac{5}{2}$

$y = -\frac{5}{2}x + b$

$(1, 2)$

$2 = -\frac{5}{2} + b$

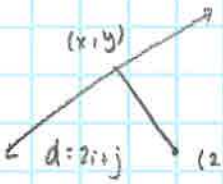
$b = \frac{9}{2}$



$\vec{r} = \begin{pmatrix} 1 \\ 2 \end{pmatrix} + \lambda \begin{pmatrix} 5 \\ -2 \end{pmatrix} \begin{pmatrix} 2 \\ -5 \end{pmatrix}$

6a. $\boxed{x = 1 + 2t}$
$\boxed{y = -2 + t}$

6b.



$\begin{pmatrix} x-2 \\ y+2 \end{pmatrix} \rightarrow \begin{pmatrix} 1+2t-2 \\ -2+t+2 \end{pmatrix} = \begin{pmatrix} -1+2t \\ t \end{pmatrix}$

$\begin{pmatrix} -1+2t \\ t \end{pmatrix} \cdot \begin{pmatrix} 2 \\ 1 \end{pmatrix} = 0$

$-2 + 4t + t = 0$

$5t = 2$

$\boxed{t = \frac{2}{5}}$