



The angle between the line L_1 and L_2 is $\frac{\pi}{2}$.

$$L_1: \frac{x+2}{3} = 2y+1 = \frac{z-5}{-2}$$

$$L_2: x = \frac{y-2}{3} = kz$$

Find k .

$$L_1: \frac{x+2}{3} = \frac{y+\frac{1}{2}}{\frac{1}{2}} = \frac{z-5}{-2}$$

$$L_2: \frac{x-0}{1} = \frac{y-2}{3} = \frac{z-0}{1/k}$$

$$L_1 \text{ is parallel to } \underline{a} = \begin{pmatrix} 3 \\ \frac{1}{2} \\ -2 \end{pmatrix}$$

$$L_2 \text{ is parallel to } \underline{b} = \begin{pmatrix} 1 \\ 3 \\ 1/k \end{pmatrix}$$

L_1 and L_2 are perpendicular

$$\underline{a} \cdot \underline{b} = 0$$

$$\begin{pmatrix} 3 \\ \frac{1}{2} \\ -2 \end{pmatrix} \cdot \begin{pmatrix} 1 \\ 3 \\ \frac{1}{k} \end{pmatrix} = 0$$

$$3 + \frac{3}{2} - \frac{2}{k} = 0$$

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

$$k = \frac{4}{9}$$