

$$x \begin{pmatrix} 4 \\ -\frac{1}{5} \end{pmatrix} + y \begin{pmatrix} -3 \\ 2 \\ -1 \end{pmatrix} = \begin{pmatrix} 27 \\ -13 \\ 20 \end{pmatrix}$$

$$\left( \begin{array}{cc|c} 4 & -3 & 27 \\ -\frac{1}{5} & 2 & -13 \\ 5 & -1 & 20 \end{array} \right)$$

$$\left( \begin{array}{cc|c} 1 & -2 & 13 \\ 4 & -3 & 27 \\ 5 & -1 & 20 \end{array} \right) \begin{array}{l} 4R_1 - R_2 \\ 5R_1 - R_3 \end{array}$$

$$\left( \begin{array}{cc|c} 1 & -2 & 13 \\ 0 & -5 & 25 \\ 0 & -9 & 45 \end{array} \right)$$

$$\left( \begin{array}{cc|c} 1 & -2 & 13 \\ 0 & 1 & -5 \\ 0 & 1 & -5 \end{array} \right) 2R_2 + R_1$$

$$\left( \begin{array}{cc|c} 1 & 0 & 3 \\ 0 & 1 & -5 \\ 0 & 0 & 0 \end{array} \right) \begin{array}{l} \rightarrow a=3 \\ \rightarrow b=-5 \\ c=c \end{array}$$

$$\Rightarrow \begin{pmatrix} 27 \\ -13 \\ 20 \end{pmatrix} = 3 \begin{pmatrix} 4 \\ -\frac{1}{5} \end{pmatrix} - 5 \begin{pmatrix} -3 \\ 2 \\ -1 \end{pmatrix}$$

vector

span

$$\begin{pmatrix} -2 & -10 & 110 \\ -1 & -3 & 45 \\ 5 & -3 & k \end{pmatrix} \begin{matrix} -2 & -10 \\ -1 & -3 \\ 5 & -3 \end{matrix}$$

$$6k - 1750 + 330 + 1650 - 210 - 10k$$

$$\Rightarrow -4k + 20 = 0$$

$$\Rightarrow k = 5$$