Oppgave 1:

$$\begin{cases} 2x_1+4x_2=10 \\ 3x_1+4x_3=6 \\ x_2+kx_3=5 \end{cases} = \begin{bmatrix} 2 & 4 & 0 \\ 3 & 0 & 4 \\ 0 & 1 & k \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 10 \\ 6 \\ 5 \end{bmatrix}$$

Reduce to Row echelon form

$$\left[\begin{array}{ccc|c} 2 & 4 & 0 & 10 \\ 3 & 0 & 4 & 6 \\ 0 & 1 & k & 5 \end{array}\right] = \left[\begin{array}{ccc|c} 1 & 2 & 0 & 5 \\ 3 & 0 & 4 & 6 \\ 0 & 1 & k & 5 \end{array}\right] = \left[\begin{array}{ccc|c} 1 & 2 & 0 & 5 \\ 0 & -6 & 4 & -9 \\ 0 & 1 & k & 5 \end{array}\right]$$

$$= \left[\begin{array}{ccc|c} 1 & 2 & 0 & 5 \\ 0 & 1 & k & 5 \\ 0 & 0 & (6k+4) & 21 \end{array}\right]$$

$\Rightarrow$ for å finne ikke konsekvens

System løs $6k+4=0$

$6k+4=0$, $6k=-4$, $k=-\frac{4}{6}$, $\underline{k=-\frac{2}{3}}$

Hvis k er lik $-\frac{2}{3}$ er systemet ikke konsekvent