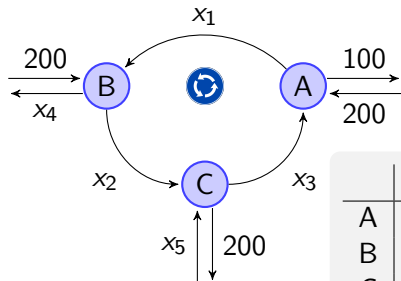


Example: Traffic flow in a roundabout

We count cars in a roundabout¹.



A	$200 + x_3 = 100 + x_1$
B	$x_1 + 200 = x_2 + x_4$
C	$x_5 + x_2 = 200 + x_3$

Question: How can we model the traffic in the roundabout?

¹Note that in a roundabout cars are only allowed to travel in one direction.

The linear system gives rise to the augmented matrix

$$\begin{bmatrix} 1 & 0 & -1 & 0 & 0 & 100 \\ -1 & 1 & 0 & 1 & 0 & 200 \\ 0 & 1 & -1 & 0 & 1 & 200 \end{bmatrix} \rightsquigarrow \begin{bmatrix} 1 & 0 & -1 & 0 & 0 & 100 \\ 0 & 1 & -1 & 0 & 1 & 200 \\ 0 & 0 & 0 & 1 & -1 & 100 \end{bmatrix}$$

Thus the parametric vector form of the general solution is

$$\begin{bmatrix} 100 \\ 200 \\ 0 \\ 100 \\ 0 \end{bmatrix} + x_3 \begin{bmatrix} 1 \\ 1 \\ 1 \\ 0 \\ 0 \end{bmatrix} + x_5 \begin{bmatrix} 0 \\ -1 \\ 0 \\ 1 \\ 1 \end{bmatrix}$$