

35: $\begin{matrix} \text{flip} \downarrow & \text{neg} \swarrow \\ \begin{bmatrix} 6 & -5 \\ 3 & -2 \end{bmatrix} \\ -15 & -12 \end{matrix}$

$$\det(A) = ad - bc = -12 - (-15) = \underline{\underline{3}}$$

$$A^{-1} = \frac{1}{3} \begin{bmatrix} -2 & +5 \\ -3 & 6 \end{bmatrix} = \begin{bmatrix} -\frac{2}{3} & \frac{5}{3} \\ -1 & 2 \end{bmatrix}$$

$$\begin{bmatrix} 6 & x \\ y & 4 \end{bmatrix} \begin{bmatrix} 5 \\ 3 \end{bmatrix} = \begin{bmatrix} 39 \\ -23 \end{bmatrix}$$

$\begin{matrix} 2 \times 2 & 2 \times 1 \end{matrix}$

Solve for x & y

$$\begin{bmatrix} 30 + 3x \\ 5y + 12 \end{bmatrix} = \begin{bmatrix} 39 \\ -23 \end{bmatrix}$$

$$\begin{aligned} 30 + 3x &= 39 \\ 3x &= 9 \\ x &= 3 \end{aligned}$$

$$\begin{aligned} 5y + 12 &= -23 \\ 5y &= -35 \\ y &= -7 \end{aligned}$$