

Warm-up: Solving Systems Using Matrices

$$\text{Solve: } \begin{aligned} 5x - 4y &= -2 \\ -3x &= -4y + 1 \end{aligned}$$

$$\begin{bmatrix} 5 & -4 \\ -3 & 4 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -2 \\ 1 \end{bmatrix}$$

$$\begin{bmatrix} x \\ y \end{bmatrix} = \frac{1}{8} \begin{bmatrix} 4 & 4 \\ 3 & 5 \end{bmatrix} \begin{bmatrix} -2 \\ 1 \end{bmatrix}$$

$$= \frac{1}{8} \begin{bmatrix} -8 + 4 \\ -6 + 5 \end{bmatrix}$$

$$= \frac{1}{8} \begin{bmatrix} -4 \\ -1 \end{bmatrix}$$

$$= \begin{bmatrix} -4/8 \\ -1/8 \end{bmatrix}$$

$$\boxed{x = -\frac{1}{2} \quad y = -\frac{1}{8}}$$