Handout 1 - The Old Switcheroo and Who's Who in the Matrix - Answers

1. Express 3x - 2y = 5 and -x + 4y = 1using matrices.

$$e_{23}$$
?

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

- Ans: 4

Ans:
$$\begin{bmatrix} 3x & -2y \\ -x & 4y \end{bmatrix} = \begin{bmatrix} 5 \\ 1 \end{bmatrix}$$
2. Express these as equations: $\begin{bmatrix} x & -y \\ 3x & 4y \end{bmatrix} \begin{bmatrix} -6 \\ 2 \end{bmatrix}$ 7. In this matrix $\begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$, what is e_{23} ?

- Ans: x y = -6, 3x + 4y = 2.
- 3. In this matrix $\begin{bmatrix} 3 & -5 & 1 \\ -2 & 0 & 4 \end{bmatrix}$ what is in row one?

Ans: Identity matrix

Ans: Row one: 3 -5 1

- 8. Express 2x-2y+3z=5, 3x+4y+z=8and -4x - 2y - 2z = 8 using matrices.
- 4. In this matrix $\begin{bmatrix} 3 & -5 & 1 \\ -2 & 0 & 4 \end{bmatrix}$ what is in column two?

Ans:
$$\begin{bmatrix} 2x & -2y & 3z \\ 3x & 4y & z \\ -4x & -2y & -2z \end{bmatrix} = \begin{bmatrix} 5 \\ 8 \\ 8 \end{bmatrix}$$

Ans: Column two: -5 0

- 5. In this matrix $\begin{bmatrix} 3 & -5 & 1 \\ -2 & 0 & 4 \end{bmatrix}$ which en-

$$\begin{bmatrix} x & 2y & 5z \\ -5x & -3y & -z \\ -4x & 4y & -2z \end{bmatrix} = \begin{bmatrix} 6 \\ 9 \\ 8 \end{bmatrix}$$

Ans: e_{12}

- Ans: x + 2y + x = 6, -5x 3y z = 9, -4x + 4y 2z = 8.
- 6. In this matrix $\begin{bmatrix} 3 & -5 & 1 \\ -2 & 0 & 4 \end{bmatrix}$, what is
- 10. What is the formula for location of entries?

Ans: e_{rc}

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