

## Fall 2024 MATH33A Worksheet 2 Answers

If you notice any mistakes, please let us know!

- 3
  - 2
  - 1
- $\begin{bmatrix} 28 \\ -10 \\ 8 \end{bmatrix}$
  - Undefined
  - 14
  - $\begin{bmatrix} 13 \\ 7 \end{bmatrix}$
  - $\begin{bmatrix} x + 2y + 3z \\ 4x + 5y + 6z \\ 7x + 8y + 9z \end{bmatrix}$
  - $\begin{bmatrix} x + 2y + 3z \\ 4x + 5y + 6z \\ 7x + 8y + 9z \end{bmatrix}$
- Yes:  $\begin{bmatrix} 3 \\ -8 \end{bmatrix} = 2 \begin{bmatrix} 3 \\ 2 \end{bmatrix} - 3 \begin{bmatrix} 1 \\ 4 \end{bmatrix}$
  - Yes:  $\begin{bmatrix} -4 \\ -1 \\ -15 \end{bmatrix} = 2 \begin{bmatrix} 1 \\ 4 \\ -2 \end{bmatrix} - \begin{bmatrix} 6 \\ 9 \\ 11 \end{bmatrix}$
  - No
- $\begin{bmatrix} 8 & 1 \\ 4 & -1 \\ -3 & 1 \end{bmatrix}$
  - $\begin{bmatrix} 3 & 4 & 5 \\ -1 & -1 & -5 \end{bmatrix}$
  - $\begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$
- $\begin{bmatrix} 1/9 & 0 \\ 0 & 1/3 \end{bmatrix}$
  - Not invertible
  - $\begin{bmatrix} 1 & 2 \\ 2 & 5 \end{bmatrix}$
- Scale in the  $x$  direction by 4 and the  $y$  direction by 2
  - Rotate counterclockwise by  $\pi/3$  (or  $60^\circ$ )
  - Horizontal shear to the right by 1 unit