# Assignment HW-08 due 03/27/2024 at 11:59pm PDT

# 1. (1 point) Are the following matrices invertible?

$$\boxed{?}1. \left[ \begin{array}{rrr} -4 & -2 \\ -3 & -3 \end{array} \right]$$

$$\boxed{?}2. \begin{bmatrix} 30 & -5 \\ 0 & 0 \end{bmatrix}$$

$$\boxed{?}3. \left[ \begin{array}{cc} -6 & -5 \\ 30 & 25 \end{array} \right]$$

$$\boxed{?}4. \begin{bmatrix} -1 & -4 \\ 5 & -4 \end{bmatrix}$$

# Answer(s) submitted:

- Invertible
- Not invertible
- Not invertible
- Invertible

#### (correct)

## 2. (1 point) If

$$A = \left[ \begin{array}{cc} -2 & 0 \\ 0 & 7 \end{array} \right],$$

$$A^{-1} = \begin{bmatrix} - & - \\ - & - \end{bmatrix}.$$

Answer(s) submitted:

−1/2

(correct)

### **3.** (1 point) Are the following matrices invertible?

$$\begin{array}{c|cccc}
? 1. & 1 & 6 & 3 \\
0 & -2 & 4 \\
-1 & -12 & 9
\end{array}$$

$$\begin{array}{c|cccc}
? 2. & 1 & 4 & -5 \\
0 & 0 & -2 \\
-1 & 5 & 3
\end{array}$$

#### *Answer(s) submitted:*

- Not invertible
- Invertible

#### (correct)

## **4.** (1 point) If

$$A = \left[ \begin{array}{rrr} -3 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & -2 \end{array} \right],$$

then

$$A^{-1} = \left[ \begin{array}{ccc} - & - & - \\ - & - & - \\ - & - & - \end{array} \right].$$

Answer(s) submitted:

• -1/3

(correct)

## **5.** (1 point) If

$$A = \left[ \begin{array}{ccc} 4 & 4 & 9 \\ 0 & -6 & 9 \\ 0 & 0 & -1 \end{array} \right],$$

then

$$A^{-1} = \begin{bmatrix} --- & --- \\ --- & --- \\ --- & --- \end{bmatrix}$$

Answer(s) submitted:

• 1/4

(correct)

# **6.** (1 point) If

$$A = \left[ \begin{array}{rrr} -1 & -1 & 0 \\ -1 & -2 & -1 \\ 0 & -1 & 0 \end{array} \right],$$

then

$$A^{-1} = \begin{bmatrix} --- & --- \\ --- & --- \end{bmatrix}.$$

Answer(s) submitted:

-1

(correct)

# **7.** (1 point) If

$$A = \left[ \begin{array}{cc} -5 & 2 \\ 7 & -1 \end{array} \right],$$

then

$$A^{-1} = \begin{bmatrix} - & - \\ - & - \end{bmatrix}.$$

Given 
$$\vec{b} = \begin{bmatrix} 1 \\ 1 \end{bmatrix}$$
, solve  $A\vec{x} = \vec{b}$ .

$$\vec{x} = \begin{bmatrix} & --- \\ & --- \end{bmatrix}$$
.

Answer(s) submitted:

- 1/9
- 1/3

(correct)

**8.** (1 point) If

$$A = \left[ \begin{array}{ccc} 5 & -10 & -21 \\ 1 & -1 & -1 \\ 1 & -2 & -4 \end{array} \right],$$

then
$$A^{-1} = \begin{bmatrix} --- & --- \\ --- & --- \end{bmatrix}.$$
Given  $\vec{b} = \begin{bmatrix} 0 \\ 5 \\ -1 \end{bmatrix}$ , solve  $A\vec{x} = \vec{b}$ .

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$$\vec{x} = \begin{bmatrix} --- \\ --- \end{bmatrix}$$
.

Answer(s) submitted:

- 2
- 21

(correct)

**9.** (1 point) The matrix  $\begin{bmatrix} 6 & 7 \\ -9 & k \end{bmatrix}$  is invertible if and only if  $k \neq$ \_\_\_.

Answer(s) submitted:

• -63/6

(correct)