

## Table of Contents Homework

| Pg # |      | Grade Info |     |    | Description   |
|------|------|------------|-----|----|---------------|
|      |      | Date       | GRD | WT |               |
| 1    | 8/28 | 100%       | 1   |    | HWO           |
| 2    | 9/4  | 100%       | 1   |    | HW1           |
| 3    | 9/9  |            | 1   |    | Parent Viewer |
| 4    |      |            |     |    | ?             |
| 5    |      |            |     |    | BAD!          |
| 6    |      |            |     |    |               |
| 7    |      |            |     |    |               |
| 8    |      |            |     |    |               |
| 9    |      |            |     |    |               |
| 10   |      |            |     |    |               |
| 11   |      |            |     |    |               |
| 12   |      |            |     |    |               |
| 13   |      |            |     |    |               |
| 14   |      |            |     |    |               |
| 15   |      |            |     |    |               |
| 16   |      |            |     |    |               |
| 17   |      |            |     |    |               |
| 18   |      |            |     |    |               |
| 19   |      |            |     |    |               |
| 20   |      |            |     |    |               |
| 21   |      |            |     |    |               |
| 22   |      |            |     |    |               |
| 23   |      |            |     |    |               |

| Pg # |  | Write Grade in appropriate column |     |    | Description |
|------|--|-----------------------------------|-----|----|-------------|
|      |  | Date                              | GRD | WT |             |
| 24   |  |                                   |     |    |             |
| 25   |  |                                   |     |    |             |
| 26   |  |                                   |     |    |             |
| 27   |  |                                   |     |    |             |
| 28   |  |                                   |     |    |             |
| 29   |  |                                   |     |    |             |
| 30   |  |                                   |     |    |             |
| 31   |  |                                   |     |    |             |
| 32   |  |                                   |     |    |             |
| 33   |  |                                   |     |    |             |
| 34   |  |                                   |     |    |             |
| 35   |  |                                   |     |    |             |
| 36   |  |                                   |     |    |             |
| 37   |  |                                   |     |    |             |
| 38   |  |                                   |     |    |             |
| 39   |  |                                   |     |    |             |
| 40   |  |                                   |     |    |             |
| 41   |  |                                   |     |    |             |
| 42   |  |                                   |     |    |             |
| 43   |  |                                   |     |    |             |
| 44   |  |                                   |     |    |             |
| 45   |  |                                   |     |    |             |
| 46   |  |                                   |     |    |             |

Table of Content Entries, dates and descriptions, should match the information on the parent viewer. Write the grade received in the appropriate column: TOC's will be graded by randomly checking entries using the assignment sheet. Use this TOC for HOMEWORK and TESTS, QUIZZES and CLASSWORK. GRD=GRADE WT=WEIGHT EC=EXTRA CREDIT

HW Grade: 100%

→ Answered: 1, 3, 4, 18, 23, 24, 27  
 → Not Answered: 0

$$1. \left[ \begin{array}{l} x_1 + 5x_2 = 7 \\ 5x_1 - 7x_2 = -5 \end{array} \right] \times 7 \quad \left| \begin{array}{l} x_1 + 5x_2 = 7 \\ (\frac{3}{4}) + 5x_2 = 7 \\ 5x_2 = \frac{25}{4} \\ x_2 = 5/4 \end{array} \right.$$

$$\left. \begin{array}{l} + [5x_1 - 7x_2 = -5] \times 5 \\ 32x_1 = 24 \\ x_1 = 3/4 \end{array} \right|$$

$$3. \left[ \begin{array}{l} x_1 + 5x_2 = 7 \\ x_1 + 2x_2 = -2 \end{array} \right] \times 2 \quad \left| \begin{array}{l} x_1 + 5x_2 = 7 \\ (-8) + 5x_2 = 7 \\ 5x_2 = 15 \\ x_2 = 3 \end{array} \right| \boxed{(-8, 3)}$$

$$\left. \begin{array}{l} - [x_1 + 2x_2 = -2] \times 5 \\ -3x_2 = 24 \\ x_2 = -8 \end{array} \right|$$

$$4. \left[ \begin{array}{l} x_1 - 5x_2 = 1 \\ 3x_1 - 7x_2 = 5 \end{array} \right] \times 3 \quad \left| \begin{array}{l} x_1 - 5x_2 = 1 \\ x_1 - 5(\frac{1}{4}) = 1 \\ x_1 = 9/4 \end{array} \right| \boxed{(9/4, 1/4)}$$

$$\left. \begin{array}{l} + 8x_2 = 2 \\ x_2 = 1/4 \end{array} \right|$$

$$18. \left[ \begin{array}{l} x_1 + 2x_2 + x_3 = 4 \\ x_2 - x_3 = 1 \\ x_1 + 3x_2 = 0 \end{array} \right] \left[ \begin{array}{l} 1 & 2 & 1 & 4 \\ 0 & 1 & -1 & 1 \\ 1 & 3 & 0 & 0 \end{array} \right] \rightarrow \left[ \begin{array}{l} 1 & 2 & 1 & 4 \\ 0 & 1 & -1 & 1 \\ 0 & 1 & -1 & -4 \end{array} \right] \rightarrow \left[ \begin{array}{l} 1 & 2 & 1 & 4 \\ 0 & 1 & -1 & 1 \\ 0 & 0 & 0 & -5 \end{array} \right]$$

The three planes do not have  
 at least one common point  
 of intersection b/c  $0 \neq -5$ .

23. a) True; "It is important to note that row operations are reversible."
- b) False; "If m and n are positive integers, an  $m \times n$  matrix is a rectangular array of numbers with m rows and n columns."
- c) False; "The set of all possible solutions is called the solution set of the linear system."
- d) True; "Two Fundamental Questions About a Linear System:  
 1. Is the system consistent; that is, does at least one solution"

HW Grade: 100%

→ Answered:  
 1. 2: 7, 13, 15, 16, 19, 30, 31  
 1. 3: 6, 5, 8, 9, 11, 15, 17, 19, 23 (a-e), 27 (a-b), 32  
 1. 4: 5, 7, 9, 16, 15, 17, 19, 26, 29, 30, 32

→ Not Answered: Ø

1.2

$$7. \begin{bmatrix} 1 & 3 & 4 & 7 \\ 3 & 9 & 7 & 6 \end{bmatrix} \xrightarrow{\text{REF}} \begin{bmatrix} 1 & 3 & 4 & 7 \\ 0 & 0 & 5 & -15 \end{bmatrix} \xrightarrow{\text{REF}} \begin{bmatrix} 1 & 3 & 4 & 7 \\ 0 & 0 & 1 & 3 \end{bmatrix} \xrightarrow{\text{RREF}} \begin{bmatrix} 1 & 3 & 0 & 5 \\ 0 & 0 & 1 & 3 \end{bmatrix}$$

$$\left. \begin{array}{l} x_1 + 3x_2 = -5 \\ x_3 = 3 \end{array} \right\} \boxed{\begin{array}{l} x_1 = -3x_2 - 5 \\ x_2 \text{ is free} \\ x_3 = 3 \end{array}}$$

$$13. \begin{bmatrix} 1 & -3 & 0 & -1 & 0 & -2 \\ 0 & 1 & 0 & 0 & -4 & 1 \\ 0 & 0 & 1 & 9 & 4 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \xrightarrow{\text{REF}} \begin{bmatrix} 1 & 0 & 0 & 0 & -3 & 5 \\ 0 & 1 & 0 & 0 & -4 & 1 \\ 0 & 0 & 1 & 9 & 4 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

① + 3② + ③ → 0

$$\left. \begin{array}{l} x_1 - 3x_5 = 5 \\ x_2 - 4x_5 = 1 \\ x_4 + 9x_5 = 4 \end{array} \right\} \boxed{\begin{array}{l} x_1 = 3x_5 + 5 \\ x_2 = 4x_5 + 1 \\ x_3 \text{ is free} \\ x_4 = 4 - 9x_5 \\ x_5 \text{ is free} \end{array}}$$

15. a) Consistent & Unique  
 b) Inconsistent

16. a) Consistent & Unique  
 b) Consistent & Non-unique

$$19. \begin{array}{l} x_1 + h x_2 = 2 \\ 4 x_1 + 8 x_2 = k \end{array} \left| \begin{array}{c} \begin{bmatrix} 1 & h & 2 \end{bmatrix} \xrightarrow{\text{REF}} \begin{bmatrix} 1 & h & 2 \\ 0 & (8-h), (k-8) \end{bmatrix} \\ \end{array} \right.$$

- a) No solution.  
 $8-h=0 \rightarrow h=2$   
 $k-8 \neq 0 \rightarrow k \neq 8$
- b) A unique solution.  
 $h \neq 2$ , so that the second statement can be true and not have  $x_2$  free.
- c) Many solutions.  
 $\begin{cases} h=2 \\ k=8 \end{cases} \Rightarrow \begin{cases} x_1=2 \\ x_2 \text{ is free} \end{cases}$

#2  
9/4

HW Grade: 100%

→ Answered:  
 1. 2: 7, 13, 15, 16, 19, 30, 31  
 1. 3: 6, 5, 8, 9, 11, 15, 17, 19, 23 (c-e), 27 (a-b), 32  
 1. 4: 5, 7, 9, 16, 15, 17, 19, 26, 29, 30, 32

→ Not Answered: Ø

1.2

$$7. \begin{bmatrix} 1 & 3 & 4 & 7 \\ 3 & 9 & 7 & 6 \end{bmatrix} \xrightarrow{\text{REF}} \begin{bmatrix} 1 & 3 & 4 & 7 \\ 0 & 0 & -5 & -15 \end{bmatrix} \xrightarrow{\text{REF}} \begin{bmatrix} 1 & 3 & 4 & 7 \\ 0 & 0 & 1 & 3 \end{bmatrix} \xrightarrow{\text{RREF}} \begin{bmatrix} 1 & 3 & 0 & 5 \\ 0 & 0 & 1 & 3 \end{bmatrix}$$

$$\left. \begin{array}{l} x_1 + 3x_2 = -5 \\ x_3 = 3 \end{array} \right\} \boxed{\begin{array}{l} x_1 = -3x_2 - 5 \\ x_2 \text{ is free} \\ x_3 = 3 \end{array}}$$

$$13. \begin{bmatrix} 1 & -3 & 0 & -1 & 0 & -2 \\ 0 & 1 & 0 & 0 & -4 & 1 \\ 0 & 0 & 1 & 9 & 4 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix} \xrightarrow{\text{REF}} \begin{bmatrix} 1 & 0 & 0 & 0 & -3 & 5 \\ 0 & 1 & 0 & 0 & -4 & 1 \\ 0 & 0 & 1 & 9 & 4 & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

① + 3② + ③ → 0

$$\left. \begin{array}{l} x_1 - 3x_5 = 5 \\ x_2 - 4x_5 = 1 \\ x_4 + 9x_5 = 4 \end{array} \right\} \boxed{\begin{array}{l} x_1 = 3x_5 + 5 \\ x_2 = 4x_5 + 1 \\ x_3 \text{ is free} \\ x_4 = 4 - 9x_5 \\ x_5 \text{ is free} \end{array}}$$

15. a) Consistent & Unique  
 b) Inconsistent

16. a) Consistent & Unique  
 b) Consistent & Non-unique

$$19. \begin{array}{l} x_1 + h x_2 = 2 \\ 4 x_1 + 8 x_2 = k \end{array} \left| \begin{array}{c} \begin{bmatrix} 1 & h & 2 \end{bmatrix} \xrightarrow{\text{REF}} \begin{bmatrix} 1 & h & 2 \\ 0 & (8-h), (k-8) \end{bmatrix} \\ h \neq 8 \end{array} \right.$$

a) No solution.

$$\begin{array}{l} 8 - 8h = 0 \rightarrow h = 2 \\ k - 8 \neq 0 \rightarrow k \neq 8 \end{array}$$

b) A unique solution.

$h \neq 2$ , so that the second statement can be true and not have  $x_2$  free.

c) Many solutions.

$$\begin{array}{l} h = 2 \\ k = 8 \end{array} \Rightarrow \begin{array}{l} x_1 = 2 \\ x_2 \text{ is free} \end{array}$$

#2  
9/4