Test Review Key

1) AI

$3\times4 \quad 4\times1$

$\begin{bmatrix} 26 \\ 161 \\ 182 \end{bmatrix}$

2) $2C+J$

$\begin{bmatrix} 5 & 6 \\ 4 & 0 \end{bmatrix}$

3) DE

$1\times3 \quad 3\times1$

$\begin{bmatrix} 10 \end{bmatrix}$

4) 4×1

5) 3×4

6) $f_{21} = 4$

7) $a_{23} = 9$

8) $b_{13} = 10$

9) $a_{ij} = -3$ ($\frac{3}{i}$ $\frac{2}{j}$)

10) $l_{ij} = 13$ ($\frac{4}{i}$ $\frac{1}{j}$)

11) $g_{ij} = 10$ ($\frac{3}{i}$ $\frac{2}{j}$)

12) Find HJ

$2\times3 \quad 2\times2$

NOT POSSIBLE

13) $2B-G$

NOT POSSIBLE

14) $\frac{1}{2}J - 2C$

$\begin{bmatrix} 1 & -12 \\ -16 & 9 \end{bmatrix}$

remember for test! || means determinant

15) det for C

-31.5

16) det for J

-8

17) det for G

-96

18) Find J^{-1}

$\begin{bmatrix} -3/4 & -1/2 \\ -1 & -1/2 \end{bmatrix}$

19) Find H^{-1}

NOT POSSIBLE

20) Find $J^{-1}J$

$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

21) $2x - 3y = 10 - z \Rightarrow 2x - 3y + z = 10$

$3x = 12y + 1 \Rightarrow 3x - 12y + 0z = 1$

$-x - y - 13 = 9z \quad -x - y - 9z = 13$

Matrix Eq: $\begin{bmatrix} 2 & -3 & 1 \\ 3 & -12 & 0 \\ -1 & -1 & -9 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 10 \\ 1 \\ 13 \end{bmatrix}$

22) $2x - 7 = 3y \Rightarrow 2x - 3y = 7$

$-1 - 12 = 0 \quad -x + 0y = 12$

$\begin{bmatrix} 2 & -3 \\ -1 & 0 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 7 \\ 12 \end{bmatrix}$

23) Solve #21

$\frac{151}{15}$	$\frac{73}{30}$	$\frac{-17/6}{z}$
x	y	

24) Solve #22

-12	$\frac{-31/3}{y}$
x	

25) $2x - 3y + z = 12$

$-x + y - 5z = 0$

$2x + y + 5z = 11$

$\begin{bmatrix} 2 & -3 & 1 \\ -1 & 1 & -5 \\ 2 & 1 & 5 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 12 \\ 0 \\ 11 \end{bmatrix}$

$x = 137/16 \quad y = 39/32 \quad z = -47/32$

26) $4x = y - 12 \Rightarrow 4x - y = -12$

$y = 12 - 11x \Rightarrow 11x + y = 12$

$$\begin{bmatrix} 4 & -1 \\ 11 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -12 \\ 12 \end{bmatrix} \qquad x = 0 \quad y = 12$$

27) $3x + y = -10$

$-x - y = 6$

$$\begin{bmatrix} 3 & 1 \\ -1 & -1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -10 \\ 6 \end{bmatrix} \qquad x = -2 \quad y = -4$$

28) $4x + 5y = 20$

$3x + 4y = 21$

$$\begin{bmatrix} 4 & 5 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 20 \\ 21 \end{bmatrix} \qquad x = -25 \quad y = 24$$

29) Let x = regular admission

y = student

z = children

$$\begin{cases} x + y + z = 210 \\ 5x + 3y + 1z = 710 \\ x = 2z + 10 \Rightarrow x + 0y - 2z = 10 \end{cases}$$

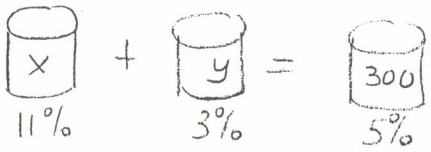
$$\begin{bmatrix} 1 & 1 & 1 \\ 5 & 3 & 1 \\ 1 & 0 & -2 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 210 \\ 710 \\ 10 \end{bmatrix}$$

$x = 70$

$y = 110$

$z = 30$

70 reg admission tickets, 110 student tickets, 30 childrens tickets

30) 

$x + y = 300$

$.11x + .03y = .05(300)$

15

$$\begin{bmatrix} 1 & 1 \\ .11 & .03 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 300 \\ 15 \end{bmatrix} \qquad x = 75 \quad y = 225$$

75 grams of 11% sol and 225 grams of 3% s

31) Let x = # of pounds of raisins

y = # of pounds of nuts

$x + y = 5$

$3.15x + 4.40y = 20.00$

$$\begin{bmatrix} 1 & 1 \\ 3.15 & 4.40 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 5 \\ 20 \end{bmatrix} \qquad x = 1.60 \quad y = 3.40$$

1.6 pounds of raisins + 3.4 pounds of nuts

32) Let $A = \begin{bmatrix} 9 & 5 \\ 7 & 4 \end{bmatrix}$ $B = \begin{bmatrix} 282 & 9 & 260 & 75 & 180 \\ 221 & 7 & 203 & 60 & 140 \end{bmatrix}$

$$A^{-1} * B = \begin{bmatrix} 23 & 1 & 25 & 0 & 20 \\ 15 & 0 & 7 & 15 & 0 \end{bmatrix}$$

23 | 1 | 25 | 0 | 20 | 15 | 0 | 7 | 15 | 0 Use chart on textbook page 234 to decode

W A Y T O G O