

Review 2A

No Calculators may be used on this exam.

1. Solve the system
$$\begin{cases} 3x+2y=7 \\ 2x-y=0 \end{cases}$$
2. Solve the system
$$\begin{cases} 2x-6y=2 \\ -3x+9y=-3 \end{cases}$$
3. Use Gauss-Jordan elimination to show that $(1, 2, 3)$ is the solution of the system
$$\begin{cases} 2x+3y-z=5 \\ x-y+z=2 \\ 3x-2y+z=2 \end{cases}$$
4. Find all solutions of
$$\begin{cases} x-2y+z=-1 \\ 2x-y-z=0 \end{cases}$$
5. Combine $\begin{bmatrix} 3 & 2 & 1 \\ 4 & 8 & 1 \end{bmatrix} + 2 \begin{bmatrix} -1 & 0 & 1 \\ 1 & 2 & 3 \end{bmatrix}$.
6. Multiply $\begin{bmatrix} 3 & 2 & 1 \\ 4 & 8 & 1 \end{bmatrix} \begin{bmatrix} -1 & 0 \\ 4 & -1 \\ 2 & 1 \end{bmatrix}$
7. Find the inverse of $\begin{bmatrix} 1 & 0 & 1 \\ 2 & 1 & 3 \\ 0 & -1 & 0 \end{bmatrix}$.
8. Find the inverse of $\begin{bmatrix} 5 & 8 \\ 3 & 5 \end{bmatrix}$.
9. Use the inverse found in the last problem to solve
$$\begin{cases} 5x+8y=10 \\ 3x+5y=8 \end{cases}$$

Answers (Not Solutions) to the problems on the other side: 1. $(16, 7)$; 2. No Solution; 4. $(-z + 2, 1, z)$; 5. $\begin{bmatrix} 3 & -1 \\ 2 & 9 \\ -9 & 1 \end{bmatrix}$; 6. $\begin{bmatrix} 5 & 3 & -1 \\ 4 & -6 & 1 \\ 1 & 4 & -1 \end{bmatrix}$; 7. $\begin{bmatrix} -\frac{1}{7} & 0 & \frac{2}{7} \\ 0 & 1 & 0 \\ \frac{4}{7} & 0 & -\frac{1}{7} \end{bmatrix}$;
8. $\begin{bmatrix} -7 & 3 \\ 5 & -2 \end{bmatrix}$; 9. $(-293, 195)$.

Review 2B

No Calculators may be used on this exam.

1. Solve the system
$$\begin{aligned}x + y &= 23 \\ -2x + 3y &= -11\end{aligned}$$
2. Solve the system
$$\begin{aligned}-4x + 2y &= 1 \\ 6x - 3y &= 0\end{aligned}$$
3. Use Gauss-Jordan elimination to show that $(1, 2, 3)$ is the solution of the system
$$\begin{aligned}x + 2y - z &= 2 \\ x + y - z &= 0 \\ 3x - y - 2z &= -5\end{aligned}$$
4. Find all solutions of
$$\begin{aligned}x + y + z &= 3 \\ x - y + z &= 1 \\ x + z &= 2\end{aligned}$$
5. Combine
$$\begin{bmatrix} 3 & 2 \\ -4 & 0 \\ -3 & 1 \end{bmatrix} - 3 \begin{bmatrix} 0 & 1 \\ -2 & -3 \\ 2 & 0 \end{bmatrix}.$$
6. Multiply
$$\begin{bmatrix} 3 & 2 & 1 \\ 4 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix} \begin{bmatrix} 1 & -1 & 0 \\ 1 & 4 & -1 \\ 0 & -2 & 1 \end{bmatrix}$$
7. Find the inverse of
$$\begin{bmatrix} 1 & 0 & 2 \\ 0 & 1 & 0 \\ 4 & 0 & 1 \end{bmatrix}.$$
8. Find the inverse of
$$\begin{bmatrix} 2 & 3 \\ 5 & 7 \end{bmatrix}.$$
9. Use the inverse found in the last problem to solve
$$\begin{aligned}2x + 3y &= 1 \\ 5x + 7y &= 100\end{aligned}$$

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<http://www.geocities.com/pvachusk/>

Answers (Not Solutions) to the problems on the other side: 1. $(1, 2)$; 2. $(3y+1, y)$;
4. $(z+\frac{1}{3}, z+\frac{2}{3}, z)$; 5. $\begin{bmatrix} 1 & 2 & 3 \\ 6 & 12 & 7 \end{bmatrix}$; 6. $\begin{bmatrix} 7 & -1 \\ 30 & -7 \end{bmatrix}$; 7. $\begin{bmatrix} 3 & -1 & -1 \\ 0 & 0 & -1 \\ -2 & 1 & 1 \end{bmatrix}$; 8. $\begin{bmatrix} 5 & -8 \\ -3 & 5 \end{bmatrix}$;
9. $(-14, 10)$.