

Last name:

First name:

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Recommended problems - *Please do NOT turn these in:*

- §1.2: 3, 5a, 7a, 13a, 23, 31.
- §1.3: 1, 3afj, 5cij, 7d, 13a.
- §1.4: 1d, 3d, 9b, 11, 19 (find at least 3 matrices instead of 8).

**Submitted problems:** *Please turn these problems in.*  
*Make sure that show your work – do not use calculator.*

(1) Solve the system of linear equations

$$\begin{aligned}2x - 2y + 2z &= 0 \\ -2x + 5y - 2z &= 1 \\ 8x + y + 4z &= -1\end{aligned}$$

by Gauss-Jordan Elimination.

(2) For which value(s) of  $k$  does the system of equations

$$\begin{aligned}(k-3)x + y &= 0 \\ x + (k-3)y &= 0\end{aligned}$$

has nontrivial solutions?

(3) Give an example of two non-zero matrices  $A$  and  $B$  whose product  $AB$  is a zero matrix.

(4) Exercise set §1.2: Problem 30 (p.24)

(5) Exercise set §1.3: problem 4h (p.35).

(6) Exercise set §1.3: problem 23 (p.37).

(7) Is the sum of two invertible matrices necessarily invertible? If yes, prove it. If no, provide a counter example.

(8) Exercise set §1.4 problem 20 (p.49).

(9) Let  $A = \begin{bmatrix} -3 & -1 \\ 2 & 1 \end{bmatrix}$ . Compute  $A^2 - A^{-1}$ .