

Assignment 4

Due Friday at 11:00 am in class

Remarks: I may not grade all questions or all parts of the questions I may grade. Explain your solutions. Answers only will not be accepted. All details must be provided.

- (1) Solve the following system by Gaussian elimination and by Gauss-Jordan elimination.

$$2x_1 + 3x_2 + 4x_3 = 5.$$

$$3x_1 + 2x_2 + 2x_3 = 6.$$

$$x_1 + 2x_2 + 4x_3 = 7.$$

- (2) Let

$$A = \begin{bmatrix} 2 & 3 & 4 \\ 3 & 2 & 2 \\ 1 & 2 & 4 \end{bmatrix}$$

- (a) Find $\det(A)$ by using Gaussian elimination. **Note:** *there is no need to perform Gaussian elimination again. Instead, take advantage of Gaussian elimination you performed in (1) above.*
- (b) Find A^{-1} by using Gauss-Jordan elimination. **Note:** *there is no need to perform Gauss-Jordan elimination again. Instead, take advantage of Gauss-Jordan elimination you performed in (1) above.*
- (3) Solve the following system by Gaussian elimination.

$$2x_1 + 3x_2 + 4x_3 = 5.$$

$$3x_1 + 2x_2 + 2x_3 = 6.$$

$$x_1 + 4x_2 + 6x_3 = 4.$$