King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics

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Math 260-02
Quiz 1

Name: .....

ID: .....

Exercise 1. Determine the values $a, b \in \mathbb{R}$ so that the system

$$(\star) \quad \begin{cases} 3x + y - 2z = 4 \\ ax + 2y - 3z = 5 \\ 5x + 3y - 4z = b \end{cases}$$

is consistent. In each case solve the system.

Exercise 2. Let $A = \begin{pmatrix} 1 & 1 & 1 \\ 2 & 1 & 0 \\ 4 & 1 & 1 \end{pmatrix}$.

(1) Find the inverse of A.

(2) Use the inverse of A to solve the following system of linear equations:

$$\begin{cases} x + y + z = 1 \\ 2x + y \quad\;\; = 2 \\ 4x + y + z = 3 \end{cases}$$

Exercise 3. Express the matrix $A = \begin{pmatrix} 1 & 1 & 1 \\ 2 & 1 & 0 \\ 4 & 1 & 1 \end{pmatrix}$.
as a product of elementary matrices.