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Quiz 1

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. §1.1 #5d *(2 marks)* Determine whether the following system is consistent.

$x_1 + x_2 = x_3 + x_4$

The system is consistent since $(x_1, x_2, x_3, x_4) = (0,0,0,0)$ satisfies the equation.

Question 2. §1.1 #11a *(2 marks)* Find a system of linear equations correcponding to the given augmented matrix.

$$\begin{bmatrix} 2 & 0 & 0 \\ 3 & -4 & 0 \\ 0 & 1 & 1 \end{bmatrix}$$

$2x = 0$
$3x - 4y = 0$
$y = 1$

Question 3. §1.1 #14b *(2 marks)* Find the augmented matrix for the given system of linear equations

$$\begin{array}{rcrcrcl} 2x_1 & & & + & 2x_3 & = & 1 \\ 3x_1 & - & x_2 & + & 4x_3 & = & 7 \\ 6x_1 & + & x_2 & - & x_3 & = & 0 \end{array}$$

$$\begin{bmatrix} 2 & 0 & 2 & 1 \\ 3 & -1 & 4 & 7 \\ 6 & 1 & -1 & 0 \end{bmatrix}$$

Question 4. §1.1 #7b *(2 marks)* Determine whether the given vector $(3, -1, 1)$ is a solution of the linear system

$$\begin{array}{rcrcrcl} 2x_1 & - & 4x_2 & - & x_3 & = & 1 \\ x_1 & - & 3x_2 & + & x_3 & = & 1 \\ 3x_1 & - & 5x_2 & - & 3x_3 & = & 1 \end{array}$$

$2(3) - 4(-1) - 1 = 9 \neq RHS$

$\therefore (3,-1,1)$ is not a solution of the linear system.

Question 5. §1.1 #TF *(2 marks)* Determine whether the statement is true or false, and justify your answer.
The linear system with corresponding augmented matrix

$$\begin{bmatrix} 2 & -1 & 4 \\ 0 & 0 & -1 \end{bmatrix}$$

is consistent.

False, the last equation of the system is $0x + 0y = -1$.
No x, y values satisfy the above.