

Topic: Error on Homework 5

Class: Unit5 Homework

Multiple-Choice Test Background

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Q3. Given $A = \begin{bmatrix} 11.3 & -10.3 & -11.3 \\ 10.3 & -11.3 & -11.3 \end{bmatrix}$, $b = \begin{bmatrix} -5 \\ 8 \end{bmatrix}$. Then $AX = b$, then $x_1 =$ _____

☐ 218
☐ 218.4
☒ 218.4
☐ 218.4

Q4. The following system of equations has _____ solution(s).

$x + y = 2$
 $8x + 4y = 12$

☒ infinite
☐ no
☐ two
☐ unique

Q5. Consider there are only two computer companies in a country. The companies are named Duke and Zeno. Each year, Duke keeps $1/3$ of its customers, while the rest switch to Zeno. Each year, Zeno keeps $1/2$ of its customers, while the rest switch to Duke. If in 2013, Duke had $1/3$ of the market and Zeno had $2/3$ of the market, what will be the share of Duke computers when the market becomes stable?

☐ $2/3$
☐ $1/3$
☒ $1/2$
☐ $1/4$

Q6. Three kids - Jim, Corey and David receive an inheritance of \$3,253,453. The money is put in three trusts but is not divided equally to begin with. Corey's trust is three times that of David's because Corey didn't see Jim or David's share. Each trust is put in an interest-generating investment. The three trusts of Jim, Corey and David pay an interest of 6%, 8%, 4%, respectively. The total interest of all the three trusts combined at the end of the first year is \$193,740.57. The equations to find the trust money of Jim (x), Corey (y) and David (z) is a matrix form is

☐ $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & -3 \\ 0.06 & 0.08 & 0.11 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 3,253,453 \\ 0 \\ 193,740.57 \end{bmatrix}$
☒ $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & -3 \\ 0.06 & 0.08 & 0.11 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 3,253,453 \\ 0 \\ 193,740.57 \end{bmatrix}$
☐ $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & -3 \\ 0.06 & 0.08 & 0.11 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 3,253,453 \\ 0 \\ 193,740.57 \end{bmatrix}$
☐ $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 1 & -3 \\ 0.06 & 0.08 & 0.11 \end{bmatrix} \begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 3,253,453 \\ 0 \\ 193,740.57 \end{bmatrix}$

Check my answers

Complete Solution

Multiple-choice questions on other topics

REFERENCE | ANSWER | REVIEW | TRACKING | DISSEMINATION | PUBLICATIONS

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Q7. Using a computer with five _____

☐ $0.003x_1 + 55.23x_2 = 58$
☐ $6.239x_1 - 7.123x_2 = 47$
☒ $x_1 + 0.64x_2 = 1.02$
☐ $x_1 + 8.46x_2 = 1.02$
☐ $x_1 + 8.800x_2 = 1.000$
☐ $x_1 + 8.774x_2 = 1.02$

Q8. At the end of backward-elimination stage of Naïve Gauss Elimination method on the following equation

$$\begin{bmatrix} 4.2857 \times 10^7 & -9.2387 \times 10^5 & 0 & 0 \\ 4.2857 \times 10^7 & -5.4619 \times 10^5 & -4.2857 \times 10^7 & 5.4619 \times 10^5 \\ -6.5 & -0.15384 & 6.5 & 0.15384 \\ 0 & 0 & 4.2857 \times 10^7 & -3.6657 \times 10^5 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} -7.887 \times 10^7 \\ 7.887 \times 10^7 \\ 0 \\ 0 \end{bmatrix}$$

the resulting equations in the matrix form are given by:

$$\begin{bmatrix} 4.2857 \times 10^7 & -9.2387 \times 10^5 & 0 & 0 \\ 0 & 3.7688 \times 10^5 & -4.2857 \times 10^7 & 5.4619 \times 10^5 \\ 0 & 0 & -26.9485 & 6.57968 \\ 0 & 0 & 0 & 5.62500 \times 10^5 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \end{bmatrix} = \begin{bmatrix} -7.887 \times 10^7 \\ 7.887 \times 10^7 \\ 1.19356 \times 10^{-4} \\ 1.90336 \times 10^5 \end{bmatrix}$$

The determinant of the original coefficient matrix is

☐ 0.00
☐ 4.2857×10^7
☐ 5.4619×10^5
☒ -2.445×10^{16}

Q9. The following data is given for the velocity of the rocket as a function of time. To find the velocity at $t=125$ s, you are asked to use a quadratic polynomial, $v(t)=at^2+bt+c$ to approximate the velocity profile.

t	00	10	44	10	30	35
v(t)	0	0	837.04	156.78	147.55	606.47

The correct set of equations that will find a, b and c are

☐ $\begin{bmatrix} 176 & 14 & 1 \\ 225 & 12 & 1 \\ 400 & 20 & 1 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 227.04 \\ 362.70 \\ 171.25 \end{bmatrix}$
☒ $\begin{bmatrix} 225 & 15 & 1 \\ 400 & 20 & 1 \\ 900 & 30 & 1 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 362.70 \\ 517.35 \\ 602.97 \end{bmatrix}$
☐ $\begin{bmatrix} 0 & 0 & 1 \\ 225 & 15 & 1 \\ 400 & 20 & 1 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 0 \\ 362.70 \\ 517.35 \end{bmatrix}$
☐ $\begin{bmatrix} 400 & 20 & 1 \\ 900 & 30 & 1 \\ 1225 & 35 & 1 \end{bmatrix} \begin{bmatrix} a \\ b \\ c \end{bmatrix} = \begin{bmatrix} 517.35 \\ 602.97 \\ 901.67 \end{bmatrix}$

Check my answers

Complete Solution

Multiple-choice questions on other topics

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Quiz Chapter 04.07: LU Decomposition

MULTIPLE CHOICE TEST
[\(All Tests\)](#)

LU DECOMPOSITION
[\(More on LU Decomposition\)](#)

SIMULTANEOUS LINEAR EQUATIONS
[\(More on Simultaneous Linear Equations\)](#)

Pick the most appropriate answer.

Congratulations - you have completed MCQ_07_LUDecomposition.

You scored 6 points out of 6 points total.

Your answers are shown below:

- The LU decomposition method is computationally more efficient than Naïve Gauss elimination method for solving
 - a single set of simultaneous linear equations
 - multiple sets of simultaneous linear equations with different coefficient matrices and the same right hand side vectors.

Tweets by @numericalguy

numericalguy (@numericalguy)
 BBC News: Climate change is India's Test inventor's solar-powered racing cart
[See it at bbc.com/news/science-environment/2019/09/19-climate-change-is-india-test-inventor-solar-powered-racing-cart](#)

Young inventor designs solar race to beat India's rising vendors use charcoal as fuel.
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13k

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