Exam #1

ⓘ This is a preview of the published version of the quiz

Started: Feb 8 at 11:20pm

Quiz Instructions

Exam #1

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The following is Exam #1. You will have until 2:35 pm to complete this exam. The due time for the exam may be extended, so please do not stress if you are not finished and 2:35 pm approaches.

Please complete this exam on separate paper or on a tablet. Clearly indicate the question number for each question. Please show all work and clearly indicate your answers. Remember, this exam is an opportunity for you to demonstrate what you know. Please work on this exam on your own. You are not allowed to use your textbook, collaborate, nor allowed to use any external websites for assistance. You may use a calculator on this exam. Once you complete this exam, please submit a pdf of your exam to Canvas.

Once you complete the exam, please click on "Submit". You will not submit the exam to this assignment. You will submit your exam through the "**Exam #1 Submission Assignment**" in Canvas under **Assignments**. You can use a device to scan your exam. Please note that once your click Submit on this part of the exam and use your phone, you may not continue to work on your exam. If using paper, scan in your exam using Adobe Scan or any other scanning app.

You may only submit your exam once through the submission assignment. Submission times may be checked with when you log off Zoom and/or when you submit this part of the exam.

For this exam, you must keep your camera on for proctoring purposes. You will be placed into an individual breakout room. If you have any questions during the exam, you can click on the "Ask for Help" button and I will be with you as soon as possible.

(8 points) 1. Solve the following system of equations by converting to an augmented matrix and using Gaussian elimination.

$$\begin{aligned} -x+\ y+2z&=\ 1\\ 2x+3y+\ z&=-2\\ 5x+4y+2z&=\ 4 \end{aligned}$$

2. Given the following matrices:

$$A=\begin{bmatrix}3&2&-4\\5&8&-1\end{bmatrix},\quad B=\begin{bmatrix}6&-5&7\\4&2&3\end{bmatrix},\quad C=\begin{bmatrix}3&9\\5&-2\\6&2\end{bmatrix},\quad D=\begin{bmatrix}8&4\\5&3\end{bmatrix}$$

Determine the following:

(3 points) a. $4A-5B$

(5 points) b. BC

(3 points) c. C^T

(5 points) d. C^TB^T

(5 points) e. D^2

(5 points) f. $D(A+B)$

3. Assume that the following matrices represent an augmented matrix. Determine the solution of the corresponding system of equations.

(3 points) a. $\begin{bmatrix}1&3&-5&2\\0&1&4&3\\0&0&0&0\end{bmatrix}$

(3 points) b. $\begin{bmatrix}1&2&5&1\\0&1&4&-3\\0&0&1&5\end{bmatrix}$

(3 points) c. $\begin{bmatrix} 1 & -3 & 2 & 5 \\ 0 & 1 & 3 & -4 \\ 0 & 0 & 0 & 1 \end{bmatrix}$

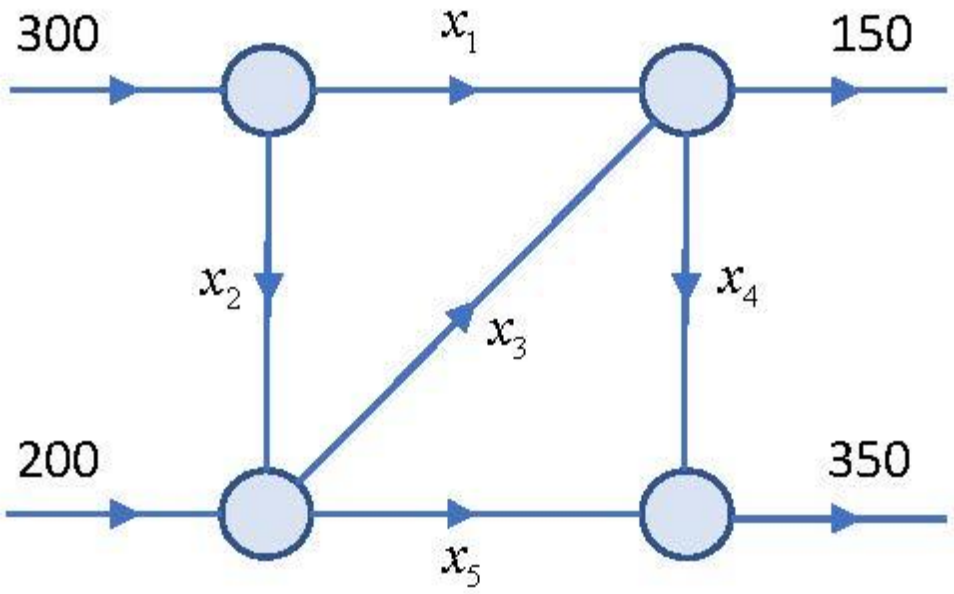
(3 points) d. $\begin{bmatrix} 1 & 2 & 4 & 3 \\ 0 & 1 & 2 & 4 \end{bmatrix}$

(8 points) 4. Given the following matrix A. Find A^{-1}, if it exists.

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

(8 points) 5. Determine a polynomial function whose graph passes through the points $(2, 5)$, $(3, 0)$, and $(4, 20)$.

(8 points) 6. The following figure shows the flow of traffic (in vehicles per hour) through a network of streets.



Solve this system for x_1, x_2, x_3, x_4, x_5

(5 points) 7. Prove the following statement: If A is an $m \times n$ matrix and c is a scalar, then $(cA)^T = cA^T$.

(5 points) 8. Prove the following statement: If A is an $m \times n$ matrix, and c and d are scalars, then $(c + d)A = cA + dA$.

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