Compsci 369

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Test 2017
Most Common Mistakes

The 5th hardest question: Question 10

56% correct

Suppose that the columns of a matrix A are mutually orthogonal but not necessarily normalised. Then the strongest statement we can make about $A^T A$ is that it is

1. Lower triangular
2. Upper triangular
3. Diagonal
4. The identity

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1. Lower triangular
2. Upper triangular
3. Diagonal ✓
4. The identity

The 4th hardest question: Question 1

55% correct

What is the smallest value of $x \geq 0$ for which the condition number $f(x) = e^{2x}$ is greater than or equal to 1000?

1. 500
2. 1000
3. e^{2000}
4. $\frac{1}{2}\log(1000)$

The 4th hardest question: Question 1

55% correct

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1. 500 ✓
2. 1000
3. e^{2000}
4. $\frac{1}{2}\log(1000)$

The 3rd hardest question: Question 4

53% correct

Gaussian elimination reduces a square matrix to the product of

1. Two orthogonal matrices
2. Two orthogonal matrices and a diagonal matrix
3. Two triangular matrices
4. An orthogonal matrix and a triangular matrix

The 3rd hardest question: Question 4

53% correct

Gaussian elimination reduces a square matrix to the product of

1. Two orthogonal matrices
2. Two orthogonal matrices and a diagonal matrix
3. Two triangular matrices ✓
4. An orthogonal matrix and a triangular matrix

The 2nd hardest question: Question 18

51% correct

In a Poisson process with arrivals at rate 5, what is the distribution and mean of the times between arrivals?

1. Poisson with mean 5
2. Poisson with mean 0.2
3. Exponential with mean 0.2
4. Exponential with mean 5

The 2nd hardest question: Question 18

51% correct

In a Poisson process with arrivals at rate 5, what is the distribution and mean of the times between arrivals?

1. Poisson with mean 5
2. Poisson with mean 0.2
3. Exponential with mean 0.2 ✓
4. Exponential with mean 5

The hardest question: Question 17

47% correct

Let $\begin{bmatrix} 0.5 & 0.5 \\ 0.3 & 0.7 \end{bmatrix}$ be the transition matrix of Markov chain X_i which takes states 1 and 2 corresponding to rows and column indices. What is $Pr(X_2 = 1 | X_0 = 2)$?

1. 0.7
2. 0.6
3. 0.3
4. 0.36

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