Module 3 - Assignment 3 Part 1 - Short Answers

Started: Sep 15 at 12:54am

Quiz Instructions

See the **Assignments (https://jhu.instructure.com/courses/106702/pages/assignments)** page for expectations, grading details, and how to submit your solutions.

Note: This assignment is due by **day 7 of Module 3**.

Question 1 5 pts

Each eigenvector of the matrix A is also an eigenvector of A^2

- (●) True
- ( ) False

Question 2 5 pts

The set of functions $\{\cos(\pi x/3), \sin(\pi x/3), 1\}$ are orthogonal with respect to the integral inner product on the interval $[3, 6]$.

- ( ) True
- (●) False

Question 3 5 pts

Diagonalize the matrix $A = \begin{bmatrix} 2 & 2 & -1 \\ 1 & 3 & -1 \\ -1 & -2 & 2 \end{bmatrix}$, i.e. find matrices P and D such that $A = PDP^{-1}$

- (●) $P = \begin{bmatrix} -1 & 2 & 1 \\ -1 & -1 & 0 \\ 1 & 0 & 1 \end{bmatrix}, D = \begin{bmatrix} 5 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$
- ( ) $P = \begin{bmatrix} -1 & 2 & 1 \\ -1 & -1 & 0 \\ 1 & 0 & 1 \end{bmatrix}, D = \begin{bmatrix} 5 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 2 \end{bmatrix}$
- ( ) $P = \begin{bmatrix} -1 & 2 & 1 \\ -1 & -1 & 0 \\ 1 & 0 & 1 \end{bmatrix}, D = \begin{bmatrix} 5 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

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$$P = \begin{bmatrix} -1 & 2 & 1 \\ -1 & -1 & 0 \\ 1 & 0 & 1 \end{bmatrix}, D = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 5 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

Question 4 5 pts

The matrix $\begin{bmatrix} 0.28 & 0.96 \\ -0.96 & 0.28 \end{bmatrix}$ is not symmetric and orthogonal

No new data to save. Last checked at 9:59pm Submit Quiz