

## Math 251 Exam 2 Information

DATE: Monday, April 7

TIME: 6:30-7:45

LOCATION: 010 Sparks

CONFLICT: The conflict exam will be from 5:05-6:20 on Monday, April 7, in 102 Chambers

MAKEUP: The makeup exam will be from 6:30-7:45 on Tuesday, April 8, in 360 Willard.

POINTS: The exam is out of 100 points.

FORMAT: There are 11 questions. 6 are multiple choice while 5 are partial credit. A table of Laplace transforms will be provided.

REVIEW: Sunday, April 6 at 7:00pm in 106 Boucke.

- TOPICS:
- Laplace Transforms
    - Definition
    - Basic Properties
    - Inverse Transforms
    - Step Functions
      - \* Writing Piecewise Continuous Functions With Step Functions
      - \* Laplace Transforms/Inverse Transforms of Step Functions
    - Solving Initial Value Problems Using Laplace Transforms
    - Dirac Delta
      - \* Laplace Transform of the Dirac Delta
  - First Order Linear Systems
    - Connection To Higher Order Linear Equations; Writing a Linear Equation As a System
    - Linear Algebra
      - \* Computing Eigenvalues/Eigenvectors/Generalized Eigenvectors
      - \* 2x2 Determinants
      - \* Connection Between Determinants and Solutions to Systems
    - General Solutions to First Order Linear Systems
    - Phase Portraits
      - \* Type of A Critical Point
      - \* Stability
      - \* Connection to Eigenvalues
  - First Order Nonlinear Systems
    - Finding Critical Points
    - Linearization Around Critical Points