Sample Final 22M034 Sec 112

This is just a sample-The actual exam may look different

December 19, 2003

Show all work, unsupported answers will receive no credit. No books
You may use your calculators and one handwritten page of formulae.

1. Find the integrating factor and solve

\[ y' = e^{2x} + y - 1 \]

2. (20 pt) Solve

\[ (x^2 + 3xy + y^2)dx - x^2dy = 0 \]

3. (20 pt)

Solve

\[ (x + e^y)dy - dx = 0. \]

4. (20 pt) Solve the equation

\[ y'' + 1 = \cos t. \]

5. (20 pt)

Solve

\[ y''' - 4y'' + 4y' = e^{2t}, y(0) = 1, y'(0) = 1. \]

Solve this equation by the method of variation of parameters. By 6

Solve

\[ y''' - 4y'' + 4y' = e^{2t}, y(0) = 1, y'(0) = 1. \]

Solve this equation by the method of identification of coefficients.

7

Solve

\[ y''' - 4y'' + 4y' = e^{2t}, y(0) = 1, y'(0) = 1. \]

Solve this equation by the method of Laplace transform.

8 Solve

\[ y''' - 4y'' + 4y' = e^{2t}, y(0) = 1, y'(0) = 1. \]

Solve this equation by the method of series centered at 0.

9 Solve the system

\[ x_1' = 2x_1 + x_2 + x_3, \]
\[ x'_2 = x_1 + 2x_2 + x_3, \]

\[ x'_3 = x_1 + x_2 + 2x_3. \]