

King Fahd University of Petroleum and Minerals
Department of Mathematics and Statistics

Math 202 Section#: Serial #: Quiz II(a) (Term 182)

Name : ID #: Marks/7

1. Show that the following differential equation is exact and solve it.

$$(2xy + y - \tan y) dx + (x^2 - x \tan^2 y + \sec^2 y) dy = 0.$$

2. Use an appropriate substitution to change the differential equation $\frac{dy}{dx} = y(xy^3 - 1)$ to a linear equation. **(Do not solve the new equation).**

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Math 202 Section#: Serial #: Quiz II(b) (Term 182)

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1. Find an integrating factor of the form $\mu(y)$ to make the following differential equation exact:

$$(3x^2y^4 + 2xy) dx + (2x^3y^3 - x^2) dy = 0$$

(Do not solve the equation).

2. Solve the initial value problem:

$$y dx + x (\ln x - \ln y - 1) dy = 0, \quad y(1) = e.$$

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1. Solve the differential equation

$$(1 + e^{x/y}) dx + \left[\left(1 - \frac{x}{y}\right) e^{x/y} \right] dy = 0$$

2. Use a suitable substitution to change the differential equation $\frac{dy}{dx} = \frac{x + y}{x + y + 1}$ to a separable equation.