

HOMEWORK #3 (Chapter 2 Exercises---Exact Equations, Homogeneous Equations)

Due on Oct. 19

Consider 1) , determine whether the given differential equation is exact. If exact, solve it.

1)  $(\tan x - \sin x \sin y)dx + \cos x \cos y dy = 0$  (page 63, Problem 17)

2) Solve the given initial-value problem

$(y^2 \cos x - 3x^2 y - 2x)dx + (2y \sin x - x^3 + \ln y)dy = 0$   $y(0) = e$  (page 63, problem 25)

Consider 3)~4), solve the given differential equation by finding an appropriate integrating factor.

3)  $(2y^2 + 3x)dx + 2xydy = 0$  ( page 63, Problem 31)

4)  $6xydx + (4y + 9x^2)dy = 0$  ( page 63, Problem 33)

5) Solve the given homogeneous equation by using an appropriate substitution.

$-ydx + (x + \sqrt{xy})dy = 0$  ( page 67, Problem 9)

6) Solve the given initial-value problem.

$(x + ye^{y/x})dx - xe^{y/x}dy = 0$   $y(1) = 0$  ( page 67, Problem 13)