

University of Bahrain
College of Science
Department of Mathematics
Second Semester 2002/2003
MATH 205
Test 1

Question 1:

Solve the following differential equations

a) $(e^y + y \cos x)dx + (\sin x - \sin y + xe^y)dy = 0$

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

c) $y' = \csc x - y \cot x.$

d) $(xy + y^2) + (x^2 + xy)\frac{dy}{dx} = 0$

Question 2:

- a) If a differential equation is separable, Show that it is exact. Is the converse true.
- b) Find the orthogonal Trajectories of

$$x + (y - c)^2 = c^2.$$