November 18, 2005 Lecturer Dmitri Zaitsev Michaelmas Term 2005

Course 2E1 2005-06 (SF Engineers & MSISS & MEMS)

S h e e t 6

Due: in the tutorial sessions next Wednesday/Thursday

Exercise 1

Find an equation for the tangent line to the curve given by the equation at the given point P_0:

(i) $x^2 + 4y^2 = 5, \quad P_0(-1, 1)$;

(ii) $xy = -2, \quad P_0(1, -2)$.

Exercise 2

Find an equation for the tangent plane to the surface given by the equation at the given point P_0:

(i) $x^2 - y^2 + z^3 = 1, \quad P_0(-1, -1, 1)$;

(ii) $z - 2x^2 = -2, \quad P_0(1, 2, -1)$.

(iii) $\sin\pi x - y^2 z = 0, \quad P_0(0, 1, 0)$.

Exercise 3

Find parametric equations for the normal lines to the curves and surfaces in Exercises 1-2 at the points given there.