

BEE1024 – Mathematics for Economists	Juliette Stephenson Amr Algarhi
Homework Week 3	Department of Economics University of Exeter

You must submit your solutions by Monday 5pm at the reception. Please do not forget to write *name* and *tutorial group* on your answer sheet.

Exercise 1 Calculate the partial derivatives of

$$z = (2 - x - y)x + (5 + 2x - 3y^2)y - 3x + 2y^2$$

Exercise 2 Find the critical point of the function

$$z = f(x, y) = 50x^2 + 18y^2 + 24y + 8$$

Exercise 3 A dairy produces whole milk and skim milk in quantities x and y gallons, respectively. Suppose that the price of whole milk is $p(x) = 20 - 5x$ and that the price of skim milk is $q(y) = 4 - 2y$ and assume that $C(x, y) = 2xy + 4$ is the total (!) joint-cost function of the commodities. What should x and y be to maximize profit, assuming that the first order conditions yield a maximum?