Margan Sod, 1/e

## Mallis Supervision Work 9

Sia. 
$$f = x^3 - 3x^2y + 3xy^2 + 8y^3 - 3y$$

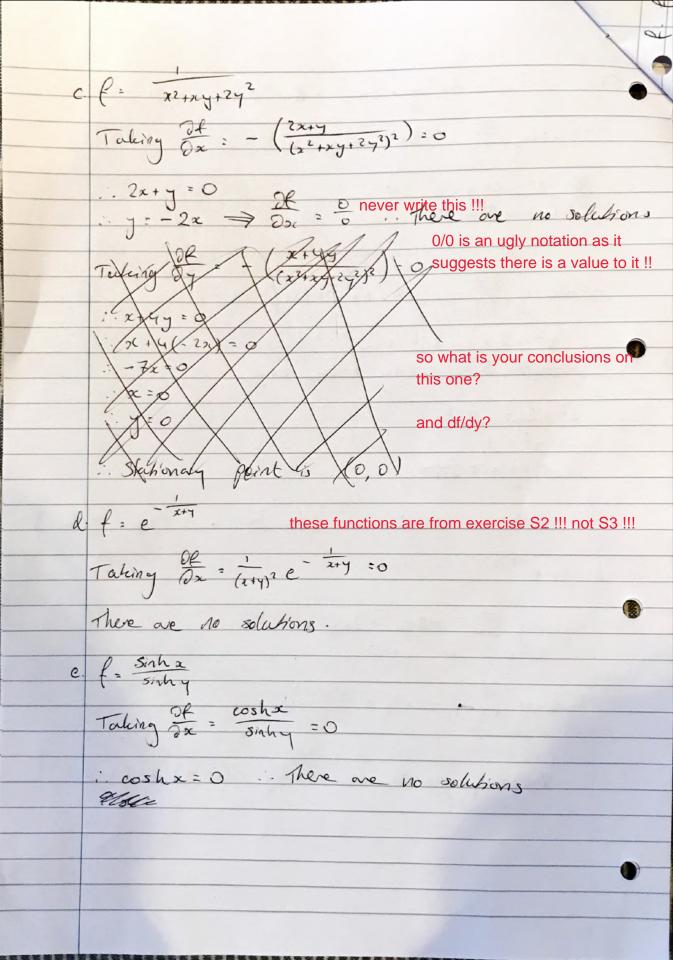
b. 
$$f = e^{-2^2y^2}$$
 $\frac{\partial f}{\partial x} = -2xy^2 e^{-x^2y^2}$ 

$$\frac{\partial x}{\partial y} = -2x^2y^2$$

$$\frac{\partial^{2} f}{\partial y^{2}} = -2x^{2} \left( e^{-x^{2}y^{2}} - 2x^{2}y e^{-x^{2}y^{2}} \right)$$

$$= -2x^{2} \left( 1 - 2x^{2}y \right) e^{-x^{2}y^{2}}$$

53.a. f= x3-3x2y+3xy2+8y3-3y Taking Dx = 3x2 -6xy +3y2 = 0  $2^{2} - 2xy + y^{2} = 0$   $(x - y)^{2} = 0$ · · 2=4 Taking Dy = -3x2 + 6xy + 24, 2 -3 = 0 : - x2 + 2xy + 8y2-1=0 Substituting xxx, xxy,  $a^2 + 2x^2 + 8x^2 = 1$  $x = y = \pm \sqrt{11}$  should be +/- 1/3 : Stationary points one ( Time time) and (- time - time) b. f= e-x 4 Taking  $\frac{\partial f}{\partial x} = \frac{\partial f}{\partial x} - 2xy^2 e^{-x^2y^2} = 0$   $\frac{\partial f}{\partial x} = \frac{\partial f}{\partial x} - 2xy^2 e^{-x^2y^2} = 0$   $\frac{\partial f}{\partial x} = \frac{\partial f}{\partial x} - 2xy^2 e^{-x^2y^2} = 0$ Taking of - 22 34 e - 227 = 0 well spotted! : Stationary points are tx ty (0, y) or (x,0) yes...could you attempt drawing the function??



of f: (x2+42) 1/2 Taking 5x = 1/2 (22+42) 1/2 . 2x = 0 Taking of = = (x2+y2) -12. 2y = 0 .. of = 0 .. there are no solutions og f = arctan (to) Taking Dx = (1+ \frac{\frac{1}{x^2}}{x^2})x^2 = \frac{-4}{x^2+4^2} = 0 Taking Dy = (1+ 12) x = (2+ 42) = 0 .. There are no solutions nh f=x Taking Dx = yx 4-1 = 0  $\therefore$  y=0 or x=0 same here not the right exercise !!! but here y=0 except when y>1 then x=0 Taking of : In a xy = 0 for  $y \le 0$  only x = 1for y>0 you have x=0 Case 1: y=0 > |ux=0 > x=1 from the x^y term but problem with the In or Case 2: 2=0 => Indeterminate form again x=1 in The stationary point is at (1,0)