| THOS | 100 / | | | |
|------|-------|---|---|--|
| DATE | 1 | 1 | / | |

| Marie Co. | DATE |
|--------------------------|--|
| | Homework -3 Sanskull Patole |
| | W1649988 |
| | fire - (it) h |
| 01. | find the derevative of the function |
| 1 | and the state of t |
| | $f(x) = -5(x+47)^{2}$ |
| 7 | using chain tule |
| 建筑 | h(x) = cf(g(x)) |
| - 6階級 | then, $h'(x) = f'(g(x)) \cdot g'(x)$ |
| | 2. 11.0 4 18P 2 (R') |
| # (0) (0) (1) (1) (1) | Hence, |
| | $f'(x) = 5 \times 2(x+47) \times 3(x+47)$ |
| 1 | |
| 1970 | (1) 0 = 5* 2 (n+47) + (1+0) |
| 300 | B OSTASI = (101) |
| 200 | = 5* 2 (x+47) * 1 |
| ·授权 | 5 6m2 (2014) |
| CE I | - bx2 (x137) |
| | 0= 10 (F4+K) 01 = 0 |
| | f'(a) = 10x+,470; 100 100 100 |
| | |
| | hence the desivative of the function $f(a) = 5(n+47)^2$ is |
| 不够 | CHON CLOX + 470 S |
| 家裁划 | |
| Q2. | determène the menomen and maximum of the function |
| | f(n) = 3n3 + 15x2 then Skehn 8t |
| | to the second se |
| \rightarrow | To calculate the monument nominum of the function |
| | we need to find the desirative of double desirative of the |
| 04 | given junction |
| 19-0 | |
| 120 | |

| PAGE No. | |
|----------|----|
| DATE | 11 |

Thing pour sule $f(x) = x^n$ $f'(x) = \pi x^{n-1}$ Lalung for our given equation

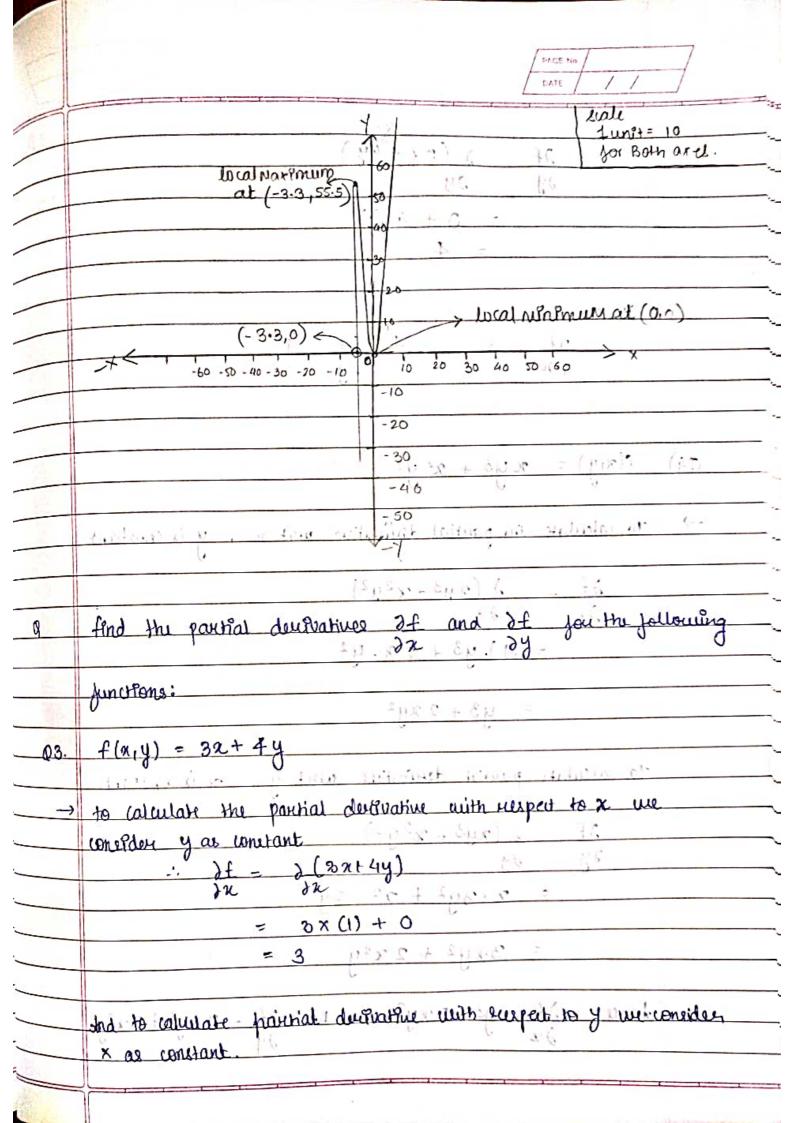
f(x) = 3x3+15x2 first order derivative, $f'(x) = 3 \times 3(x)^2 + 15 \times 2(x)^1$ $f'(x) = 3 \times 3(x)^2 + 20 \times 3(x)^2$ $f'(x) = 9x^2 + 30x$ second ordir distribile !- (x) = 9 x 2 (x) + 30 x (1) f"(x) = 18x + 30 Now, lets set f'(66) = 0 in order to get values of a f(n) = 9 ne + 30 nc = 0 this can be simplified as, " - (1) + 11+11 = (r) 3 m. (3 m + 10) 1= Onl . 1 11 11 do x can have 2 values 3n = 0 ... 8n+10 = 0 : x=0 3x=1-10 2=-10/3 the value for icante & 1 x=01 10R 27-10/30 100

| PROE | 100 | | | / |
|------|-----|----|---|---------------|
| SMIE | /_ | 1 | 1 | \mathcal{L} |
| | - | 4; | | |

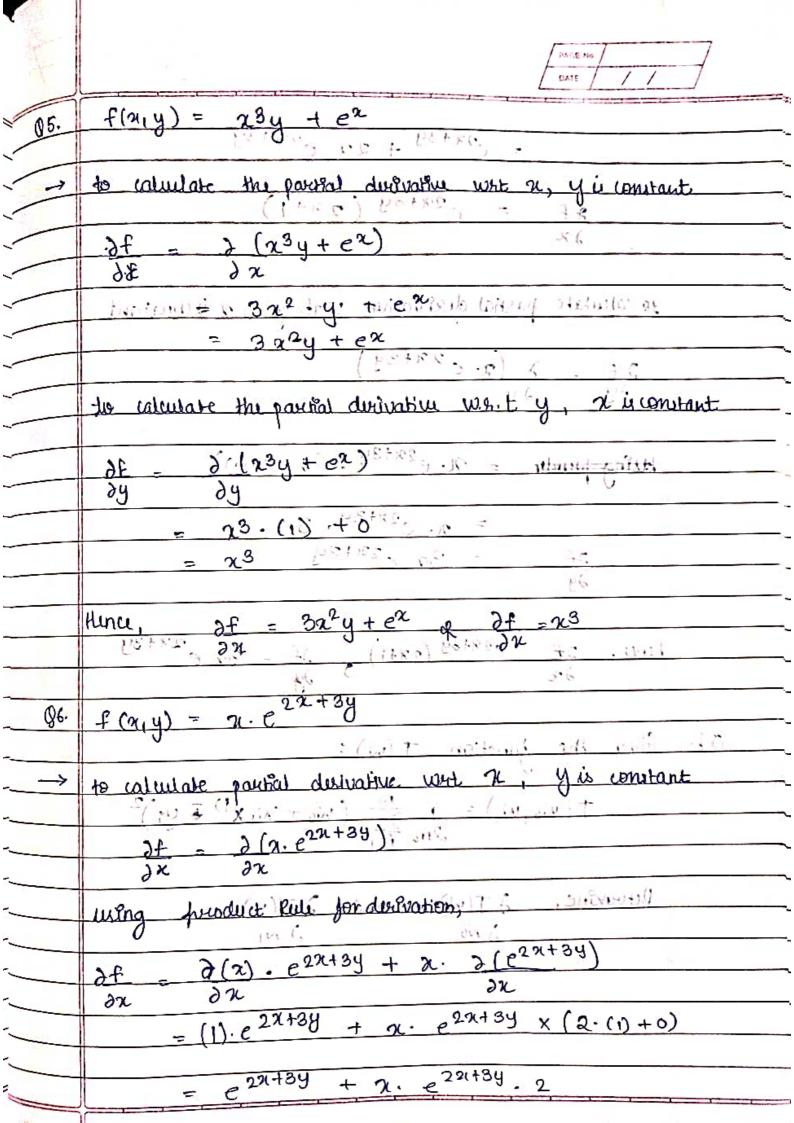
to pot the graph of the given function we also need the y-coordinates. Hence, we substitute their values back to find y-coordinates. f(n) = 328 + 15x2 00 + f(0) = 13(0)3 + 15(0)21 f(0) = 0 f(n) = 0 at n=0 : Stationary point is (0,0) 06+03 = 6 fou n=-10/3 ≈ = -3-3 f(-10/3) = 113 x (-10/3) 3 + 15 x (-10/3)2 = \$x - 1000 + 15 x 100 Mind and r 1 (1=1 -1000 14 500 in it Promings from = -1000 + 1500 - +500 f(-10/3) = 55.55 : the stationary authorized the second of the point is f(x) = 55.55 at 2 = 1-10/3 (-1013, 500/9) finally to calculate Navimum & minimum of a function

we substitute the calculated Values of '21' in the second order desivative f"(21) Lycu of Away de worl

| | PAGE No. |
|-------------|--|
| | DATE / / |
| | |
| | hener-journ n=0 11 10 de 11 1011 1011 1011 |
| | f"(0) = 18 (0) +30 11 11 |
| Mondy man. | of lad at since of the 30 pill storage and and a second |
| | |
| | 11/21/8/8 - (4)2 |
| | And you x = -1013 |
| - | V. 17/2 |
| | fu (-10/3) = 18x (-10) + 30 |
| divers pare | |
| 2000 | $0 = 6 \times -10 + 30 + $ |
| | = -60.130 |
| | C-S-= -30 - 813/ - 11 12.6. |
| 2(6/01. | Theregore |
| | Jey X = 6 , fil(0) = 30 |
| | : f"(x) > 0' evaluated at x=0 |
| | the post (00) is a local 20 |
| | the point (0,0) is a local minimum jou the function f(2). |
| | Jose Ma Javanon +(x). |
| | Jon n = -10/3, f"(n) = -30 |
| | 0 |
| | " f! (n) < 0 evaluated at x = -10/3 |
| L. granouti | the risk and the second of the |
| 11 | the point (-1012 500/2). |
| (No. | for the junition f(a). |
| | |
| | hence : (0,0) is the minima white |
| | (-10/3 , 500) W the maxima |
| - | The in a straight or the Lange La |
| - | Now lets sketch the graph |



| | PAGE No. DATE |
|-------------|--|
| | |
| | 2f -) (3x + 4y) |
| - | 29 29 |
| | = 0 + 4 (1) |
| | = 4. |
| | Hence |
| - | $2f = 3 \qquad 2f = 4$ |
| <u> </u> | dr dy |
| | |
| 94) | $f(x_1y) = xy^3 + x^2y^2$ |
| → | To calculate me pourial durivative wet n, y is constant |
| | $\partial f = \partial (\alpha y^3 + \alpha^2 y^2)$ |
| 1 5 11.00.1 | of wieder it de let was the little of the little |
| 1 | $= .(1).y^3 + 2x.y^2$ |
| - | $= 43 + 2244^2$ |
| | |
| 4 | To calculate partial derevative west y, a is constant |
| - | $\frac{\partial f}{\partial f} = \frac{\partial (xy^3 + x^2y^2)}{\partial y^3 + x^2y^2}$ |
| | $\frac{\partial f}{\partial y} = \frac{\partial (xy^3 + x^2y^2)}{\partial y}$ |
| | $= 2 \cdot 3y^2 + 2^2 \cdot 2y^2$ |
| | 2 x.39 + 22.29 34 |
| | = 3xy2 + 2x2y - |
| | chance: 16 care 2 |
| 1173 | hence $\frac{\partial f}{\partial x} = y^3 + 2xy^2$ $\frac{1}{\partial y} = \frac{\partial f}{\partial y} = 3xy^2 + 2x^2y$ |
| | |



| - Company | |
|-----------|---|
| | PAGE No. |
| - 3 | DATE |
| 11 | E. 1 11 C (N.10) |
| | $= e^{2x+3y} + 2x e^{2x+3y}$ |
| | to recover in a recovery to the section of |
| | $3f = e^{2n+3y}(2n+1)$ |
| | · du (15+15) 5 - +6 |
| | 3. (, 1./., |
| | to calculate partial desirative work y a inconstant |
| | X |
| 1 | 2f - 2 (2. e 2x+84) |
| | in addition of the party of the production of |
| 1 | |
| - | History punder = n. e2x+34 : (0 + 3 = (1)) |
| - | 1 60 he |
| i | = n. e2xt, 34. 3,). S. |
| 4. | 2f = 32 e 221+34 Ex |
| | |
| 1 | hence, $2f = e^{2\eta + 3y} (2\eta + 1)$ $2f = 3\eta e^{2\eta + 3y}$ |
| | hence, $\frac{2f}{\partial x} = \frac{e^{2\eta + 3y}}{2\eta + 3y} = \frac{2\eta + 3y}{3\eta}$ |
| | hs. 4-7.7. |
| - g1. | C |
| 1. | distant to be distant |
| 1 | AN TOTAL TOTAL STOLETING |
| | $\frac{1}{2m} \frac{(w_0 + w_1 x^{(1)} + y_1)^2}{(w_0 + w_1 x^{(1)} + y_1)^2}$ |
| - | T , |
| _ | Detornane, 2 I(W) (and) I(W) |
| | J W0 |
| | (lie tre in the politice |
| | 3. C T T T T T T T T T T T T T T T T T T |
| | 5 - 17 - 5] ox 10 tot 1 |
| - | |
| | The room - Majore |
| | |

| - | PAGE No. DATE / / |
|-------|--|
| | |
| 1 | The given function J(w) can be simplified as: |
| | $(2H - 1p_1(M + p_1(M))) \stackrel{\text{(i)}}{=} 1 - 1p_1(M)$ |
| | $J(w_0, w_1) = 1 (w_0 + w_1 x^0 - y_0)^2 f^2 (w_0 + w_1 x^2 - y_2)^2 + \cdots$ |
| | am [|
| | 11. d (wort w 2m ym)? |
| | i.e 9+ will have in terms |
| | |
| | NOW lets calculate the partial duratative jou éach! term. with |
| NO 12 | respect to wo (1) - 12 Mit old) (|
| 1 | TIME. |
| | Jou the rote term 2 (wo + w, x = 140)2 using chair stude |
| | (9/26/6+0) & Mon-16/16 = 3/16) 6 = |
| | = 2 (W0+W120-40) x 8. [1+0-0] |
| 3 | x = 112 (Wo + W121, - 40) |
| | |
| | similarly for all other xivins and 10 |
| - 6 | 2 (wo + w1 x2 + y2) = 2 (wo + w1 x2 - y2) |
| | SWO OHE HO A MIRETIONS |
| | (wo+ wixm-ym) = 12 (wo+ wixm-ym) |
| | 1 Wo 1000 |
| | y voo |
| 1 | whome S not + my 1 10 x 2 . (my - 10 x 1 x + my) (|
| | [a(. + 111 x - 4 a) + 2. (Wat W, 76 + 4) + |
| | dwo am |
| | + 2. (wo + W12m - ym) |
| ~ | |
| ~ | = 2 (wo+wixe-yb)+(wo+wix2-yz)+ |
| | 2m - + (Wo+W1xm-ym) |
| 4 | |

| | PAGE Na |
|---------------|--|
| | DATE |
| | |
| | |
| | this can be simplified as |
| | m () = (1-) |
| | 3 J(w) = 1 = (W0 + W, 2' - 4:) 3 WO m : [1=11] |
| | 2 Mor our m = (1 = 1 1 = 010) 1 = (010 010) |
| | |
| | Now partial dirivative of J(W) W.H.t. W. |
| | PROVEDS WEST THOU IF S.I |
| rilli. | |
| | 2 (W0 + W1 x1 Y1) and trager |
| | |
| H. Iluz | all ming chount suited a most est me |
| | $= 2 \left(W_0 + W_1 x^1 - y_1 \right) \times \left(0 + x^1 - 0 \right)$ |
| 10-0 | 2 (WO + WIX - 91) × (0+10) |
| | = (2:'(Wo:+W1x!-y1) *x! |
| | - & (WO T WO K ' - 91) * % |
| | $= 9 \pi^{1} \left(W_{1} + W_{2} \pi^{1} - W_{2} \right)$ |
| Cry | = 2 2' (Wost, Wix' - 41) 110 and alle 19001 |
| | similarly for all other terms |
| | 0 * |
| The Completer | 2 (Wo +W1 x2 - y2) = 2 22 (Wo + W1 x2 - y2) |
| 4 | JW1 JW - 42) |
| | |
| 1 | 2 (W0 + W12m - ym) = 22m (W0 + W12m - ym) |
| + (2: + 15. | 0 A M |
| - | 500 800 |
| 1 (| this can be simplified as, |
| | |
| (x) | STIW) LEW TOWN |
| 11 | P.T.O P.T.O |
| | |

DATE / /

2x' (wo+w1x'-y1)+ 222 (wo+w1x2-42) 1 = (w) TG a WI -. ... - - - - - - - - + 2xm (wo + w1.xm - ym) this can be simplified as = (2 2i) (W0 + W1 xi - yi) am m ((2i) (Wo+W121-yi) (W) TG dw, Q8. Find the durative of the function f(x) = 1 this equation can be simplified as, f(x) = 1+ 1/22 (ex+1)/ex (ex+1) p(a) =

