

$$= \frac{3}{3}(10 - 9) - 1(5 - 6) - 2(-3 + 4) = \frac{3}{3} + 1 - 2 = 2 > 0$$

N is positive definite

b) $f(x,y) = \frac{2}{3}x^3 + \frac{6}{3}x^2 - \frac{3}{3}y^3 - \frac{6}{3}x$

$$f(x,y) = \frac{2}{3}x^3 + \frac{6}{3}x^2 - \frac{6}{3}y^3 - \frac{6}{3}x$$

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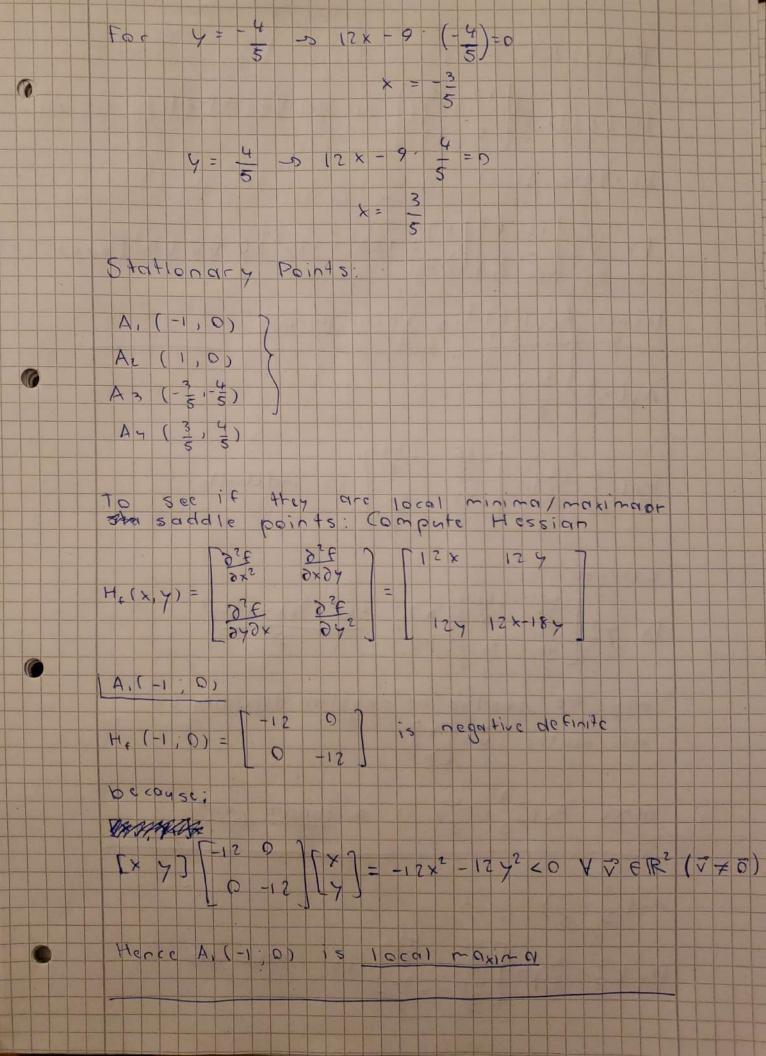
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$$f(x,y) = \frac{6}{3}x^3 + \frac{6}{3}x^3 - \frac{6}{3}x^3 - \frac{6}{3}x^3 - \frac{6}{3}x$$

$$f(x,y) = \frac{6}{3}x^3 + \frac{6}{$$



He (1,0) = 0 12) is positive definite because [x y] [12 0] [x] = 12 x2 + 12 y2 > 0 V J ER2 (V + 0) Hence Az (1,0) is local minima A3(-3-4) 10 c co 4 sc $\begin{bmatrix} \times & 7 \end{bmatrix} \begin{bmatrix} -36 & -48 \\ -5 & 5 \end{bmatrix} \begin{bmatrix} * \\ -36 \times^2 - 96 \times 7 + 36 \times^2 \end{bmatrix} = \frac{-36 \times^2 - 96 \times 7 + 36 \times^2}{5}$ may be positive or megative depending on the vector v= [x] Hence Az (-3, +4) is a saddle point A4 (3, 4) He (3) = [36 48] is indefinite

