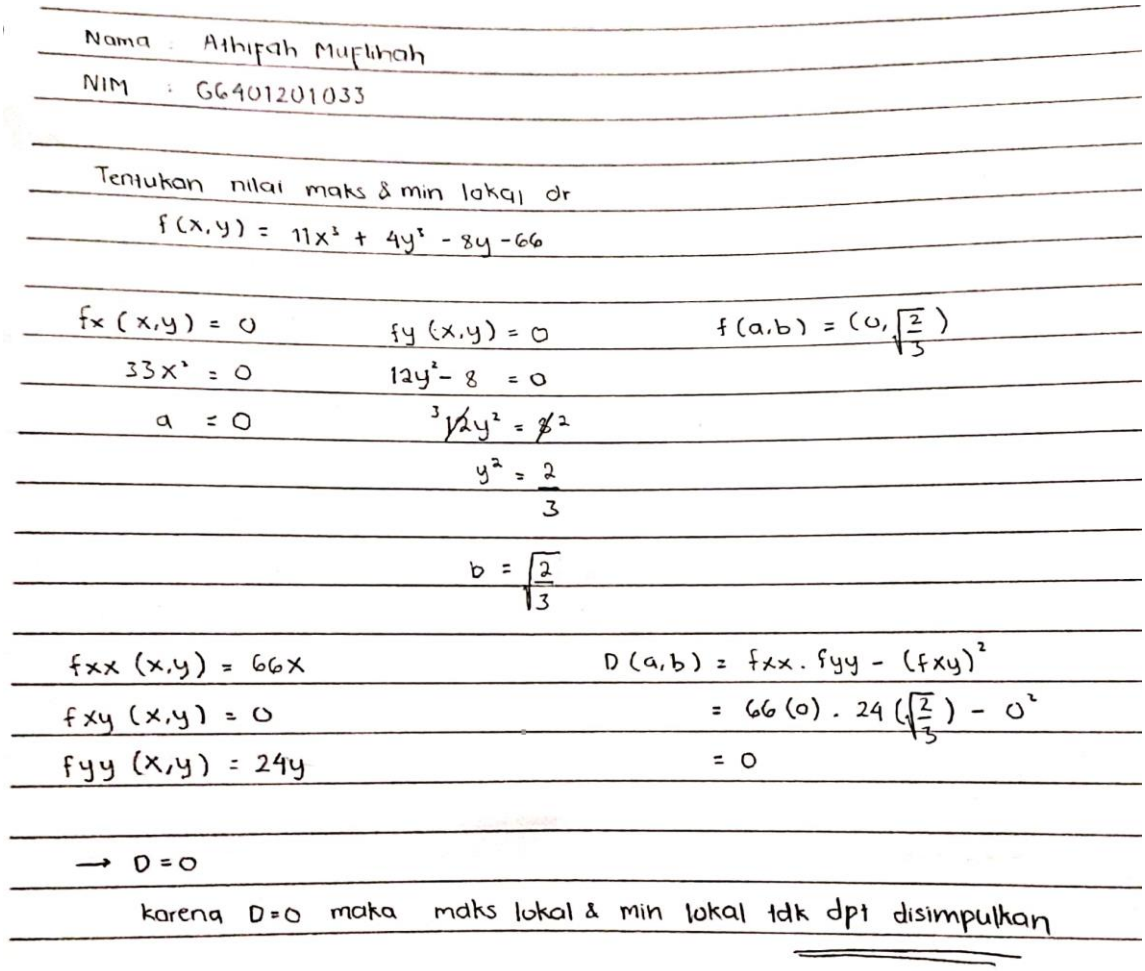
TUGAS PRAKTIKUM PERTEMUAN 6

PENGANTAR MATEMATIKA KOMPUTASIONAL

1. Tentukan nilai maksimum dan minimum lokal dari fungsi:

$$f(x,y) = 11x^3 + 4y^3 - 8y - 66$$



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Tentukan nilai maks & min lokal dr

$f(x,y) = 11x^3 + 4y^3 - 8y - 66$

$f_x(x,y) = 0$ $\quad f_y(x,y) = 0$ $\quad f(a,b) = (0, \sqrt{\frac{2}{3}})$

$33x^2 = 0$ $\quad 12y^2 - 8 = 0$

$a = 0$ $\quad {}^{3}\!\not{12}y^2 = \not{8}^{2}$

$y^2 = \frac{2}{3}$

$b = \sqrt{\frac{2}{3}}$

$f_{xx}(x,y) = 66x$ $\quad D(a,b) = f_{xx} \cdot f_{yy} - (f_{xy})^2$

$f_{xy}(x,y) = 0$ $\quad = 66(0) \cdot 24(\sqrt{\frac{2}{3}}) - 0^2$

$f_{yy}(x,y) = 24y$ $\quad = 0$

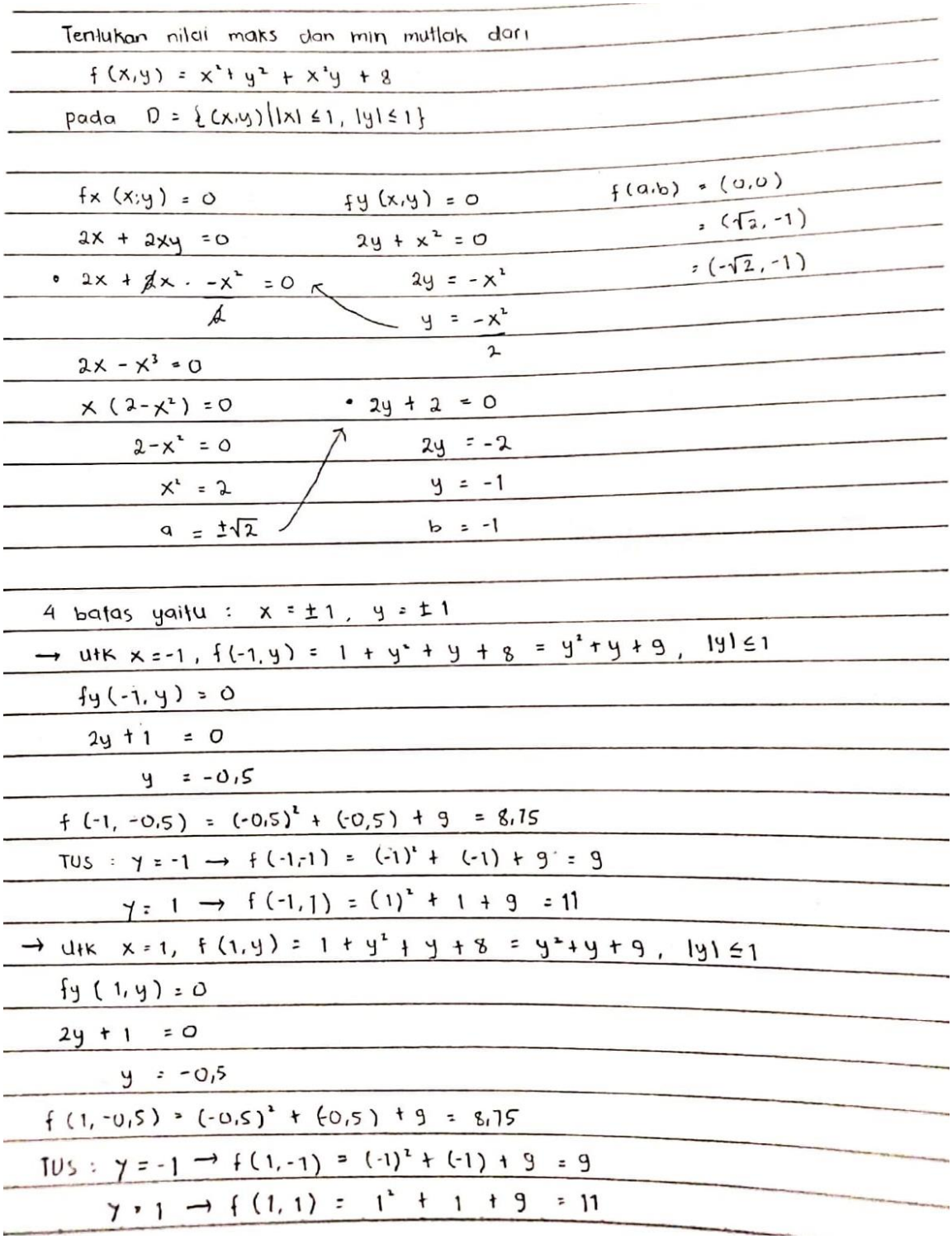
$\rightarrow D = 0$

karena $D = 0$ maka maks lokal & min lokal tdk dpt disimpulkan

2. Tentukan nilai maksimum dan minimum mutlak dari fungsi:

$$f(x,y) = x^2 + y^2 + x^2y + 8$$

Pada $D = \{(x,y) \mid |x| \leq 1, |y| \leq 1\}$



→ Utk $y = -1$, $f(x,-1) = x^2 + 1 - x^2 + 8 = 9$, $|x| \leq 1$

TUS : $x = -1 \longrightarrow f(-1,-1) = 9$

$x = 1 \longrightarrow f(1,-1) = 9$

→ Utk $y = 1$, $f(x,1) = x^2 + 1 + x^2 + 8 = 2x^2 + 9$, $|x| \leq 1$

TUS: $x = -1 \longrightarrow f(-1,1) = 2(-1)^2 + 9 = 11$

$x = 1 \longrightarrow f(1,1) = 2(1)^2 + 9 = 11$

Pada titik (0,0) nilai $f(x,y)$ adalah 8

Pada batas : $x = -1$, nilai terbesar = 11, nilai terkecil = 8,75

" $x = 1$, " 11 " 8,75

" $y = -1$, " 9. 9

" $y = 1$, " 11. " 11

Jadi maksimum global 11 dan minimum global 8