

QUIZ 8

(20MINS, 30PTS)

Please write down your name, SID, and solutions discernably.

Name :

SID :

Score :

1. (10pts) Evaluate the double integral.

$$\iint_R (1 + 3x^2) dA, \quad R = \{(x, y) : -1 \leq x \leq 1, -1 \leq y \leq 1\}$$

$$\iint_R (1 + 4x^3) dA, \quad R = \{(x, y) : -1 \leq x \leq 1, 0 \leq y \leq 2\}$$

2. (20pts : 10pts each) Use Lagrange multipliers to find the maximum and minimum values of the functions subject to the given constraint(s)

a) $f(x, y, z) = x^3 + y^3 + z^3; x^2 + y^2 + z^2 = 3$ or 12

b) $f(x, y, z) = x^2 + y^2 + z^2; x + y = 3$ or $2, 2x + 3y + 2z = 3$ or 5