No.

Date

ALDEN LUTHFI
22060[illegible]332

(1.) (a)

$F_x(x,y) = -2$ $\quad$ $g_x(x,y) = 2x$

$F_y(x,y) = 4$ $\quad$ $g_y(x,y) = 4y$

$F_z(x,y) = 3$ $\quad$ $g_z(x,y) = -3$

(1) $x^2 + 2y^2 - 3z = 0$

(2) $-2 = 2x\lambda$

(3) $4 = 4y\lambda$

(4) $3 = -3\lambda$

↳ $\lambda = -1$

↳ $y = -1$

↳ $x = 1$

↳ $z = x^2 + 2y^2 = 1$

$f(1, -1, 1) = -2 + (-4) + 3 = -3$

nilai minimumnya -3

No

Date

ALDEN LUTHFI
1206028912

① ⓐ $F_x(x,y) = 0$ and $F_y(x,y) = 0$

$F_x(x,y) = 6x^5 + 6$

$F_y(x,y) = 3y^2 - 12$

$F_x(x,y) = 0$ ketika $x = -1$

$F_y(x,y) = 0$ ketika $y = \pm 2$

$F_{xx}(x,y) = 30x^4$

$F_{yy}(x,y) = 6y$

$F_{xy}(x,y) = 0 \rightarrow F^2_{xy}(x,y) = 0$

$D(x,y) = 30x^4 6y - 0 = 30x^4 6y$

tes $p = (-1, -2)$

$D(-1,-2) > 0 \rightarrow f_{xx}(-1,-2) > 0$

tes $p = (-1, 2)$

$D(-1,2) > 0 \rightarrow f_{xx}(-1,2) > 0$

$(-1, 2)$ adalah minimal lokal

$(-1, -2)$ adalah saddle point

No.

Date

$g(x,y,z) = 125 = xyz$

$f(x,y,z) = 4(x+y+z) = 4x + 4y + 4z$

$f_x(x,y,z) = 4$ $\quad$ $g_x(x,y,z) = yz$

$f_y(x,y,z) = 4$ $\quad$ $g_y(x,y,z) = xz$

$f_z(x,y,z) = 4$ $\quad$ $g_z(x,y,z) = xy$

① $4 = yz\lambda$

② $4 = xz\lambda$

③ $4 = xy\lambda$

$\Big\} \; x = yz = z$

$xyz = 125 \rightarrow x = 5, \; y = 5, \; z = 5$

berbentuk kubus dengan panjang sisi 5

No.

Date

ALDEN WITHFI
2206028932

2. a)

$f_x(x,y,z) = -2$ $\quad g_x(x,y,z) = 2x$

$f_y(x,y,z) = 4$ $\quad g_y(x,y,z) = 4y$

$f_z(x,y,z) = 3$ $\quad g_z(x,y,z) = -3$

① $x^2 + 2y^2 - 3z = 0$

② $-2 = 2x\lambda$

③ $4 = 4y\lambda$

④ $3 = -3\lambda$

↳ $\lambda = -1$

↳ $y = -1$

↳ $x = 1$

↳ $z = x^2 + 2y^2 = 3$

$f(1, -1, 3) = -2 + (-4) + 3 = -3$

nilai minimumnya -3