

a.

$$2) F(x, y, z) = z^3 + x^2 z + y^2 z + z$$

$$2) F(x, y, z) = z^3 + x^2 z + y^2 z + x y - 8$$

$$1) F(0, 0, 2) = 0 \quad \text{Hipotesis}$$
$$0 = 0 \quad \checkmark$$

$$2) \frac{\partial F}{\partial z}(0, 0, 2) \neq 0 \quad \text{Hipotesis}$$

$$3z^2 + x^2 + y^2$$

$$12 \neq 0 \quad \checkmark$$

Rpta: Si se puede definir $z = z(x, y)$

$$Z = ((z(x, y))^3 + x^2(z(x, y)) + y^2(z(x, y)) + (x y) - 8$$

b.

$$Z = (z(x, y))^3 + x^2 (z(x, y)) + y^2 (z(x, y)) + xy - 8$$

$$\frac{\partial Z}{\partial x} = 3(z(x, y))^2 \cdot \frac{\partial z}{\partial x} + 2(z(x, y))x + x^2 \left(\frac{\partial z}{\partial x} \right) + y^2 \left(\frac{\partial z}{\partial x} \right) + y$$

$$\frac{\partial Z}{\partial x}(0, 0) = 3(z(x, y))^2 \frac{\partial z}{\partial x}(0, 0)$$

$$\frac{\partial Z}{\partial x}(0, 0) = 3(2)^2 \frac{\partial z}{\partial x}(0, 0)$$

$$12 \frac{\partial z}{\partial x}(0, 0) = 0$$

Rpta: $\frac{\partial z}{\partial x}(0, 0) = 0$

$$3a^2 \cdot a' + 2a$$

c.

1. Dom $F: \mathbb{R}^3$

2. PC

$$\frac{\delta F}{\delta x} = 0$$

$$\frac{\delta F}{\delta y} = 0$$

$$\frac{\delta F}{\delta z} = 0$$

3. Multiplicador de la Lagrange

$$L(x, y, z, \lambda) = F(x, y, z) + \lambda (x^2 + y^2)$$

