

## Corto #8 Cálculo Multivariable

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1. Encuentre la ecuación del plano tangente a  $z = 10 - \cos(\pi x^2) + 4(y^2 + 3)^{3/2}$  en el punto  $(1, 1)$ .

$$z - f(x_0, y_0) = f_x(x_0, y_0)(x - x_0) - f_y(x_0, y_0)(y - y_0)$$

$$f_x(x_0, y_0) = -\sin(\pi x^2) \cdot 2\pi x \Big|_{(1,1)} = -\sin(\pi) \cdot 2\pi = 0$$

$$f_y(x_0, y_0) = \frac{12}{2} (y^2 + 3)^{\frac{1}{2}} \cdot 2y \Big|_{(1,1)} = 6 (1 + 3)^{\frac{1}{2}} \cdot 2 = 6 \cdot 2 \cdot 2 = 24$$

$$\begin{aligned} d(1,1) &= 10 - \cos(\pi) + 4(4)^{\frac{3}{2}} \\ &= 10 + 1 + 4(4)^{\frac{3}{2}} \\ &= 11 + 4(2)^3 = 11 + 4(8) = 11 + 32 = \boxed{43} \end{aligned}$$

$$z - 43 = (0)(x - 1) - 24(y - 1)$$

$$z = -24y + 24 + 43$$

$$z = -24y + 67$$

$$z = -48y + 11$$

~~$$z = -48y + 11$$~~

$$z = -24y + 67$$

X (40/100)