

DATA LA FUNZIONE DETERMINARE EQUAZIONE DEL PIANO
TANGENTE NEL PUNTO (1,1)

$$z = \log(xy^2) - \sqrt{x+3y} + (y-1)^2$$

$$\text{PIANO TANGENTE } z = f(x_0, y_0) + f_x(x_0, y_0)(x - x_0) + f_y(x_0, y_0)(y - y_0)$$

$$f(1,1) = \log(1) - \sqrt{4} + 0 = -2$$

$$f_x = \frac{y^2}{xy^2} - \frac{1}{2\sqrt{x+3y}} + 0 = \frac{1}{x} - \frac{1}{2\sqrt{x+3y}} \Big|_{(1,1)} = 1 - \frac{1}{2\sqrt{4}} = 1 - \frac{1}{4} = \frac{3}{4}$$

$$f_y = \frac{2y}{xy^2} - \frac{3}{2\sqrt{x+3y}} + 2(y-1) = \frac{2}{y} - \frac{3}{2\sqrt{x+3y}} + 2y-2 \Big|_{(1,1)} = 2 - \frac{3}{4} = \frac{5}{4}$$

$$\Rightarrow z = -2 + \frac{3}{4}(x-1) + \frac{5}{4}(y-1)$$

$$z = -2 + \frac{3}{4}x - \frac{3}{4} + \frac{5}{4}y - \frac{5}{4} \quad z = \frac{3}{4}x + \frac{5}{4}y - 4$$