

$$\textcircled{3} \frac{d}{dx} (x^{2/3} + y^{2/3} = 2) \quad (1,1)$$

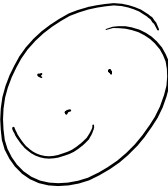
$$\frac{\frac{2}{3}x^{-1/3} + \frac{2}{3}y^{-1/3}y' = 0}{\frac{2}{3}}$$

$$x^{-1/3} + y^{-1/3}y' = 0$$

$$y' = \frac{-x^{-1/3}}{y^{-1/3}}$$

$$y' = \frac{-\sqrt[3]{y}}{\sqrt[3]{x}}$$

$$y' = -1$$



$$y - 1 = -1(x - 1)$$

32 ~~1~~ $(ye^x + xe^y = 4) \quad (4, 0)$

$ye^x + y'e^x + xe^{y'}y' + e^y = 0$

$y'e^4 + 4e^0y' + e^0 = 0$

$y'(e^4 + 4) = -1$

$y' = \frac{-1}{e^4 + 4}$

$y - 0 = \frac{-1}{e^4 + 4} (x - 4)$

$$\textcircled{33} \frac{d}{dx} (x^{1/2} + y^{-1/2} = 2xy) \quad (1,1)$$

$$\frac{1}{2}x^{-1/2} - \frac{1}{2}y^{-3/2}y' = 2(xy' + y)$$

$$= 2xy' + 2y$$

$$-\frac{1}{2}y^{-3/2}y' - 2xy' = 2y - \frac{1}{2}x^{-1/2}$$

$$y' \left(-\frac{1}{2}y^{-3/2} - 2x \right) = \dots$$

$$y' = \frac{2y - \frac{1}{2}x^{-1/2}}{-\frac{1}{2}y^{-3/2} - 2x} = \frac{\frac{3}{2}}{-\frac{5}{2}} = -\frac{3}{5}$$

$$\underline{y-1 = -\frac{3}{5}(x-1)}$$

$$(34) \frac{d}{dx} (y e^{x^2-4} + y^2 = 6) \quad (2, 2)$$

$$y e^{x^2-4} \cdot 2x + y' e^{x^2-4} + 2y y' = 0$$

$$8 + y' + 4y' = 0$$

$$5y' = -8$$

$$y' = -8/5$$

$$y - 2 = -8/5 (x - 2)$$

185 = 28, 35, 37

Ex) Find $\frac{dy}{dx}$ at $\left(\frac{2-\pi}{4}, \frac{\pi}{4}\right)$

$$\frac{d}{dx} (\sin^2(3y)) = x + y$$

$$\frac{d}{dx} (\sin(3y) \cdot \sin(3y)) = x + y$$

$$2 \cos(3y) \cdot 3y' \cdot \sin(3y) = 1 + y'$$

$$2 \left(-\frac{\sqrt{2}}{2}\right) \cdot 3y' \cdot \left(\frac{\sqrt{2}}{2}\right) = 1 + y'$$

$$-3y' = 1 + y'$$

$$-1 = 4y'$$

$$y' = -\frac{1}{4}$$