

$$M = x^{1/2}$$

$$B = x \cdot y$$

ps2 Ex 4 $y + (xy)^{1/2} = 4$ @ (2,2)

$$\frac{dy}{dx} + \frac{1}{2}(xy)^{-1/2} \cdot \frac{d}{dx}(x \cdot y) = 0$$

$$\frac{dy}{dx} + \frac{1}{2}(xy)^{-1/2} \cdot \left(x \frac{dy}{dx} + y \right) = 0$$

eval @ (2,2) $\rightarrow \frac{dy}{dx} + \frac{1}{2}(4)^{-1/2} \cdot \left(2 \frac{dy}{dx} + 2 \right) = 0$

$$\frac{dy}{dx} + \frac{1}{4} \cdot \left(2 \frac{dy}{dx} + 2 \right) = 0$$

$$\frac{dy}{dx} + \frac{1}{2} \frac{dy}{dx} + \frac{1}{2} = 0$$

$$\frac{3}{2} \frac{dy}{dx} = -\frac{1}{2}$$

$$\frac{dy}{dx} = -\frac{1}{3}$$

$$M = X^2$$

$$B = X + Y$$

pr Q5 $(x+y)^2 + y = 2 @ (0,1)$

$$2(x+y) \cdot \frac{d}{dx}(x+y) + \frac{dy}{dx} = 0$$

$$2(x+y) \left(1 + \frac{dy}{dx} \right) + \frac{dy}{dx} = 0$$

eval
@ (0,1) $\rightarrow 2(1) \left(1 + \frac{dy}{dx} \right) + \frac{dy}{dx} = 0$

$$2 + \frac{2dy}{dx} + \frac{dy}{dx} = 0$$

$$\frac{3dy}{dx} = -2$$

$$\frac{dy}{dx} = -\frac{2}{3}$$

p52 Q6 $x^2 + 4y^2 = 4$ @ (2,0)

$$2x + 8y \frac{dy}{dx} = 0$$

eval
@ (2,0) →

$$4 + 0 \frac{dy}{dx} = 0$$

4 = 0 huh.???

try another approach

$$2x + 8y \frac{dy}{dx} = 0$$

$$\frac{dy}{dx} = \frac{-2x}{8y} = \frac{-x}{4y}$$

$$\left. \frac{dy}{dx} \right|_{(2,0)} = \frac{-2}{0}$$

hmmmmmm....

what's going on here..!

$$M = \sin x$$

$$B = xy$$

ps2 Q7 $\sin(xy) = 1$

$$\cos(xy) \cdot \frac{d}{dx}(xy) = 0$$

$$\cos(xy) \cdot \left(x \frac{dy}{dx} + y \right) = 0$$

$$\cos(xy) \cdot x \frac{dy}{dx} + y \cos(xy) = 0$$

$$x \cos(xy) \frac{dy}{dx} = -y \cos(xy)$$

$$\frac{dy}{dx} = \frac{-y \cos(xy)}{x \cos(xy)}$$

$$\frac{dy}{dx} = -\frac{y}{x}$$

152 ~~ex 8~~ $x^2 + y^2 = 100$ find $\frac{d^2 y}{dx^2}$

$$2x + 2y \frac{dy}{dx} = 0$$

$$\frac{dy}{dx} = \frac{-2x}{2y} = -\frac{x}{y}$$

$$\frac{d^2 y}{dx^2} = \frac{d}{dx} \left(-\frac{x}{y} \right)$$

$$= \frac{y \cdot -1 - (-x) \cdot \frac{dy}{dx}}{y^2}$$

$$= \frac{-y + x \frac{dy}{dx}}{y^2}$$

$$= \frac{-y + x \left(-\frac{x}{y} \right)}{y^2}$$

$$= \frac{-y - \frac{x^2}{y}}{y^2} \cdot \frac{y}{y}$$

$$= \frac{-y^2 - x^2}{y^3}$$