

NAME: _____

(1) Find $\frac{dy}{dx}$ if $2y \sin x = \cos y$

Calculus Class Mr. Rivara

$$2(y \sin x)' = (\cos y)'$$

$$2(y' \sin x + y(\cos x)x') = (-\sin y)y'$$

$$y'(2 \sin x + \sin y) = -2y \cos x$$

$$y' = \frac{-2y \cos x}{2 \sin x + \sin y}$$

CALCULUS -

(2) Find the equation of the line tangent

$$\text{to } yx^2 + 3y^2 = 1 \quad @ \quad x = 1$$

$$\text{when } x = 1 \quad 3y^2 + y - 1 = 0$$

$$\text{Let } y_{1,2} = \frac{-1 \pm \sqrt{13}}{6} = y_{1,2}$$

$$m = \frac{dy}{dx} = y' \Rightarrow (yx^2)' + (3y^2)' = 0$$

$$(y'x^2 + y2xx') + 3(2)yy' = 0$$

$$y' = \frac{-2xy}{x^2 + 6y}$$

$$\text{Using } x = 1 \quad \& \quad y_{1,2} = \frac{-1 \pm \sqrt{13}}{6}$$

$$y' = \frac{-13 \pm \sqrt{13}}{3(13)} = -\frac{1}{3} \pm \frac{\sqrt{13}}{39}$$

$$\left(y + \frac{1}{6} \mp \frac{\sqrt{13}}{6} \right) = \left(-\frac{1}{3} \pm \frac{\sqrt{13}}{39} \right) (x - 1)$$

Mr. Rivera