

21] Find  $dy/dx$

$$(x+y)^2 = 5x^4 y^3$$

$$\rightarrow 2(x+y)(1+y') = 5x^4(3y^2 y') + y^3(20x^3)$$

$$2x + 2xy' + 2y + 2yy' = 15x^4 y^2 y' + 20x^3 y^3$$

$$\rightarrow 2xy' + 2yy' - 15x^4 y^2 y' = 20x^3 y^3 - 2x - 2y$$

$$\therefore y'(2x + 2y - 15x^4 y^2) = 20x^3 y^3 - 2x - 2y$$

$$\rightarrow y' = \frac{20x^3 y^3 - 2x - 2y}{2x + 2y - 15x^4 y^2}$$

29] Write the equation of the line tangent to the curve  $4x^2 + 3y^2 - 4y - 3 = 0$  at  $(-1, 2)$ .

$$\rightarrow y - y_1 = m(x - x_1)$$

~~to~~ to find the slope (m):  $m = y'$

$$8x + 6yy' - 4y' = 0 \quad \text{at } (-1, 2)$$

$$\rightarrow -8 + 12y' - 4y' = 0$$

$$-8 + 8y' = 0 \rightarrow \frac{-8}{+8} + 8y' = \frac{0}{+8}$$

$$\therefore \frac{8}{8}y' = \frac{8}{8} \rightarrow \boxed{y' = 1}$$

$\therefore$  the equation is:  $m = y' = 1$ ,  $(-1, 2)$

$$10.29 \quad y - 2 = 1(x - (-1)) \rightarrow y - 2 = x + 1 \rightarrow \boxed{y = x + 3}$$