Jolition Worksheet 02

Quotion |

(a) By the product rule, we have:

$$F'(x) = (pin x)^2 t can x + pin x \cdot (t can x)^2$$

$$= (pin x)^2 t can x + pin x \cdot (pie^2 x)$$

$$= (pin x)^2 t con x + pin x \cdot (pie^2 x)$$

$$= (pin x)^2 t con x + pin x \cdot (pin x)^2 t con x$$

$$= pin x + pin x + pin x \cdot (pin x)^2 t con x$$

$$= pin x + pin x + pin x \cdot (pin x)^2 t con x$$
So, $F'(x) = sin x \cdot (pin x)^2 t con x$
(d) By the power rule of the product rule:

$$p'(x) = -(pin x)^2 t con x \cdot (pin x)^2 t con x$$
and

(d) By the power rule of the product rule:

$$\sigma'(x) = -\left(\cos x \sin x\right)^{-2} \left(\cos x \sin x\right)^{2}$$

(105 x sinx) = ((05x) sinx + (05x (sinx))

$$= -\sin^2 x + (os^2 x)$$

$$= xos(2x) \quad [trigo.identify].$$

$$50$$
,
 $50(x) = -\frac{\cos 2x}{(\cos x \sin x)^2} = \frac{\cos 2x}{(\sin 2x/2)^2}$

So, 15 (71) = -4 cot(2x) cosec(2x).

Question 2.

(a) By the chain rule,

 $(tan(y))' = sec^{2}y \cdot g'$ and so using implicit differentiation:

ser y y' = 2x

 $\Rightarrow y' = \frac{2\pi}{2u^2y}.$

(b) By the product rule, (u sing) = 4' sing + 4 cosq. 4

(y sing) = y' sing + y (059. y' = y' (sing + y (059).

so, by using implicit diffuentiation:

y'(siny+yrosy) = 1

 $\Rightarrow y' = \frac{1}{siny + y cosy}.$