(1) $f(x) = x^2 \cdot \sin(x)$ 1)

$$\frac{d}{dx}[u(x) \cdot v(x)] = u'(x) \cdot v(x) + u(x) \cdot v'(x)$$

So in this formula let;

$u(x) = x^2$

$v(x) = \sin(x)$

first find derivatives of $u(x)$ and $v(x)$:

$u'(x) = \frac{d}{dx}(x^2) = 2x$

$v'(x) = \frac{d}{dx}[\sin(x)] = \cos(x)$

Now, Product Rule

$f'(x) = u'(x) \cdot v(x) + u(x) \cdot v'(x)$

$f'(x) = (2x) \cdot \sin(x) + (x^2) \cdot \cos(x)$

Therefore :-

$$f'(x) = 2x \sin(x) + x^2 \cos(x)$$

(2) $f(x) = \cos(x^2)$

$$f'(x) = \frac{d}{dx}(\cos(x^2))$$

then USE Differentiation Rules:

$$f'(x) = \frac{d}{dg}(\cos(g)) \times \frac{d}{dx}(x^2)$$

Differentiate:

$$f'(x) = -\sin(g) \times 2x$$

Substitute back

$$f'(x) = -\sin(x^2) \times 2x$$

- finally Reorder:

$$f'(x) = -2x \times \sin(x^2)$$