

Ex 1)

$$f(x) = (6x+5)(x^3-2)$$

$f(x)$ $g(x)$

$$f(x) = 6x+5 \quad g(x) = x^3-2$$
$$f'(x) = 6 \quad g'(x) = 3x^2$$

$$f'(x) = (6x+5)(3x^2) + (x^3-2)(6)$$

$$f'(x) = 18x^3 + 15x^2 + 6x^3 - 12$$

$$f'(x) = 24x^3 + 15x^2 - 12$$

2) $f(x) = \sqrt{x}(4-x^2)$

$$f(x) = x^{1/2} \quad g(x) = 4-x^2$$

$$f(x) = x^{1/2}(4-x^2)$$

$f(x)$ $g(x)$

$$f'(x) = \frac{1}{2}x^{-1/2} \quad g'(x) = -2x$$

$$f'(x) = x^{1/2}(-2x) + (4-x^2)(\frac{1}{2}x^{-1/2})$$

$$f'(x) = -2x^{3/2} + 2x^{-1/2} - \frac{1}{2}x^{3/2}$$

$$f'(x) = -\frac{5}{2}x^{3/2} + 2x^{-1/2}$$

$$f'(x) = \frac{-5x^{3/2}}{x^{1/2}} + \frac{2}{x^{1/2}} \cdot \frac{2}{2}$$

$$f'(x) = \frac{-5x^2 + 4}{2x^{1/2}}$$

3) $f(x) = \sqrt{x} \sin x$

$f(x)$ $g(x)$

$$f(x) = x^{1/2} \quad g(x) = \sin x$$

$$f'(x) = \frac{1}{2}x^{-1/2} \quad g'(x) = \cos x$$

$$f'(x) = x^{1/2}(\cos x) + \sin x(\frac{1}{2}x^{-1/2})$$

$$\sqrt{x} \cos x + \frac{\sin x}{2\sqrt{x}}$$