

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

$$f'(x) = 6x + 6$$

Using Product Rule

$$f'(x) = 3x \cdot (1) + (x+2) \cdot 3$$

$$= 3x + 3x + 6 = 6x + 6$$

Take derivative of

$$f(x) = 4x \cos x$$

$$f'(x) = 4x \cdot -\sin x + \cos x \cdot 4$$

$$= -4x \sin x + 4 \cos x$$

$$f(x) = \frac{x^2 + 3x}{6} = \frac{1}{6} (x^2 + 3x)$$

OR

$$\frac{x^2}{6} + \frac{3x}{6}$$
$$\frac{1}{6}x^2 + \frac{1}{2}x$$

$$f'(x) = \frac{1}{6} \cdot 2x + \frac{1}{2}$$
$$= \frac{1}{3}x + \frac{1}{2}$$

$$f(x) = \frac{x^2 + 3x}{6}$$

$$f'(x) = \frac{6 \cdot (2x + 3) - (x^2 + 3x) \cdot 0}{36}$$

$$= \frac{12x + 18}{36} = \frac{1}{\cancel{6}} (2x + 3) = \frac{2x + 3}{\cancel{6}}$$