

⑤

$$(3s^3+2)^{-2} (5s^2+4)$$

$$v' = 10s$$

$u' \Rightarrow$  need chain rule!

$$\text{Let } m = 3s^3+2$$

$$\text{Let } y = m^{-2}$$

$$u' = \frac{dy}{dm} \cdot \frac{dm}{ds}$$

$$= 9s^2 \cdot -2m^{-3}$$

$$u' = 9s^2 \cdot -2(3s^3+2)^{-3}$$

$$u \cdot v' + v \cdot u'$$

$$(3s^3+2)^{-2} \cdot (10s) + (5s^2+4) [9s^2 \cdot -2(3s^3+2)^{-3}]$$

$$\textcircled{7} y = \cos(3x^3)$$

$$u = 3x^3 \rightarrow \frac{du}{dx} = 9x^2$$

$$y = \cos u \rightarrow \frac{dy}{du} = -\sin u$$

$$\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$$

$$= -\sin(3x^3) \cdot 9x^2 \text{ OR}$$

$$= -9x^2 \sin(3x^3)$$

$$\textcircled{9} y = \sin^3(x) = [\sin(x)]^3$$

$$u = \sin x$$

$$y = u^3$$

$$\frac{dy}{dx} = \frac{dy}{du} \cdot \frac{du}{dx}$$

$$= 3u^2 \cdot \cos x$$

$$= 3(\sin(x))^2 \cdot \cos x = 3\cos x \cdot \sin^2(x)$$