Chain Rule

$$\frac{d}{dx} f(g(x)) = f'(g(x)) \cdot g'(x)$$

"Derivative of" outside function · "derivative of" inside function

9.) $\sin(3r^5)$ — $\frac{d}{dr}\, 3r^5$ $3 \cdot 5r^4$

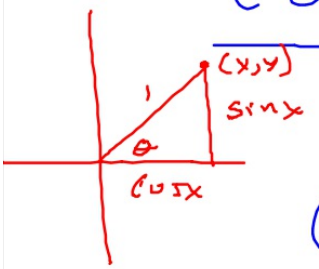
$\cos(3r^5) \cdot 15r^4$

$$\boxed{15r^4 \cdot \cos(3r^5)}$$

$$\frac{d}{dx}\tan x$$

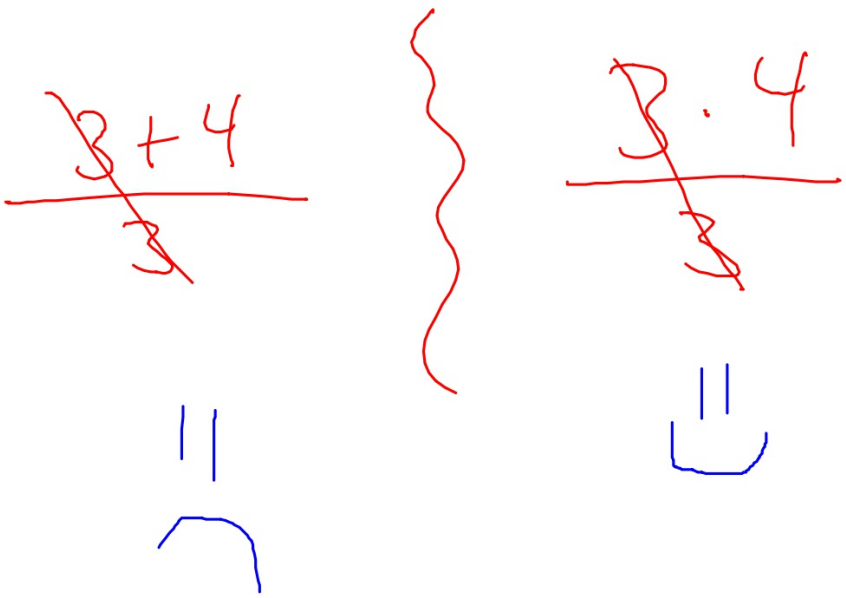
$$\frac{d}{dx}\frac{\sin x}{\cos x}\quad \frac{f}{g}=\quad \frac{f'g-fg'}{g^2}$$

$$\frac{\cos x\cdot\cos x-\sin x\cdot-\sin x}{\cos^2 x}$$



$$\frac{\cos^2 x+\sin^2 x}{\cos^2 x}=\frac{1}{\cos^2 x}$$

$$\frac{d}{dx}\tan x=\boxed{\sec^2 x}$$


3+4
3
3·4
3

$$h(x) = f(x) \cdot g(x)$$

$$h'(x) = f'g + fg'$$

$$h'(1) = f'(1) \cdot g(1) + f(1) \cdot g'(1)$$

$$2 \cdot 4 + 1 \cdot -2$$

$$8 - 2$$

$$\boxed{6}$$

$h(x) = (f(x))^2$

$h'(x)\ 2 \cdot f(x) \cdot f'(x)$

$h'(3) = 2f(3)f'(3)$

$2 \cdot 4 \cdot 0$

0

1.) $(x^5 - 4)^2$

$2(x^5 - 4) \cdot 5x^4$

$2 \cdot f(x) \cdot f'(x)$

$$h(x) = (f(x))^2$$

$$h'(3) = (f'(3))^2$$

$$h = f(g(x))$$

$$h' = f'(g(x)) \cdot g'(x)$$

$$h'(1) = f'(g(1)) \cdot g'(1)$$

$$f'(4) \cdot -2$$

$$-1 \cdot -2$$

$$2$$

p 133
#7-21
for friday.