

## QUIZ 5

1) Find the derivative of  $y = \frac{\tan(x)}{8x+3}$

Quotient Rule:

$$\frac{dy}{dx} = \frac{\frac{d}{dx} [\tan(x)] (8x+3) - \tan(x) \frac{d}{dx} [8x+3]}{(8x+3)^2}$$

$$= \frac{\sec^2(x) (8x+3) - \tan(x) (8)}{(8x+3)^2}$$

$$= \frac{(8x+3) \sec^2(x) - 8 \tan(x)}{(8x+3)^2}$$

2) Find the derivative of  $y = \frac{3}{(7x^2+1)^2}$ .

Write  $y = 3(7x^2+1)^{-2}$ .

Chain rule: Inner:  $g(x) = 7x^2+1 = u$

Outer:  $f(u) = 3u^{-2}$

$$\begin{aligned} \frac{dy}{dx} &= f'(u) \cdot g'(x) = -6u^{-3} (14x) \\ &= \frac{-84x}{(7x^2+1)^3} \end{aligned}$$