

班級(Class/Dept) :

學號(ID) :

姓名(Name) :

SEC.3.5

1. 寫出下述法則(微分法則怎麼來的，還是要自己練習一下，才不會忘記)

$$\frac{d}{dx} \sin x = \text{_____}; \quad \frac{d}{dx} \cos x = \text{_____}$$

$$\frac{d}{dx} \tan x = \text{_____}; \quad \frac{d}{dx} \sec x = \text{_____}$$

$$\frac{d}{dx} \csc x = \text{_____}; \quad \frac{d}{dx} \csc x = \text{_____}$$

2. $y = \sec x \tan x$, 求 y'

SEC. 3.6

3. 寫出連鎖律 Type 1 : $\frac{d}{dx} f(g(x)) = \text{_____}$ Type 2 : $\frac{dy}{dx} = \text{_____}$

4. 寫出廣義幕法則 $\frac{d}{dx} [g(x)]^n = \text{_____}$ $\frac{d}{dx} u^n = \text{_____}$

5. 三角函數微分公式有 6 個。

$$\frac{d}{dx} \sin g(x) = \text{_____}$$

$$\frac{d}{dx} \sin u = \text{_____}$$

$$\frac{d}{dx} \cos g(x) = \text{_____}$$

$$\frac{d}{dx} \cos u = \text{_____}$$

$$\frac{d}{dx} \tan g(x) = \text{_____}$$

$$\frac{d}{dx} \tan u = \text{_____}$$

$$\frac{d}{dx} \cot g(x) = \text{_____}$$

$$\frac{d}{dx} \cot u = \text{_____}$$

$$\frac{d}{dx} \sec g(x) = \text{_____}$$

$$\frac{d}{dx} \sec u = \text{_____}$$

$$\frac{d}{dx} \csc g(x) = \text{_____}$$

$$\frac{d}{dx} \csc u = \text{_____}$$

6. $\frac{d}{dx} e^{g(x)} = \text{_____}$ $\frac{d}{dx} e^u = \text{_____}$

7. 已知 $f(2) = 5$, $g(1) = 2$, $f'(2) = 3$, $g'(1) = 4$, 求 $f(g(x))$ 在指定點 $x=1$ 的導數。

可用任何同學熟悉的微分公式或微分口訣求導數，
詳細說明計算，若沒整理答案，扣一半分數。答案裡不要有負次方形式。

$$8. \frac{d}{dx} \frac{1}{(x^2 + 2)^3}$$

$$9. \frac{d}{dx} \sqrt{2x}$$

$$10. \frac{d}{dx} \sqrt{x + \sqrt{x}}$$

$$11. \frac{d}{dx} [\sqrt{3x - 4}(5x + 2)^4]$$

$$12. \frac{d}{dx} \frac{x}{\sqrt{x^2 + 2}}$$

$$13. \frac{d}{dx} \left(\frac{x}{x^2 + 2} \right)^{10}$$

$$14. \frac{d}{dx} \sec x^2$$

$$15. \frac{d}{dx} \cos(x^2 + 2)^3$$

$$16. \frac{d}{dx} \sin^3(x^2 + 2)$$

$$17. \frac{d}{dx} \cot \csc x$$

$$18. \frac{d}{dx} \sin \cos x$$

$$19. \frac{d}{dx} \frac{1}{e^{2x}}$$

$$20. \frac{d}{dx} e^{x^3+2}$$

$$21. \frac{d}{dx} e^{\tan x}$$

$$22. \frac{d}{dx} \tan e^x$$