

3.4 The Chain Rule

單選題

1. $(\sin 2x)^{(104)}=?$
(A) $2^{104} \sin 2x$; (B) $2^{104} \cos 2x$;
(C) $\sin 2x$; (D) $\cos 2x$.

Ans: A [103 學年度]

2. Let $f\left(\frac{1+x}{1-x}\right) = x$. Find $f'(2)$.
(A) 1; (B) $\frac{1}{3}$; (C) $\frac{1}{9}$; (D) $\frac{2}{9}$.

Ans: D [100 學年度]

3. Given $f(x) = \frac{1}{2} + \sin(x)$ for $x \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$, what is the value of $(f^{-1})'(0)$?
(A) 1; (B) $\frac{1}{2}$; (C) -2; (D) $\frac{2}{\sqrt{3}}$.

Ans: D [101 學年度]

4. Let $f(x) = e^{\tan(x)}$. Then $f'(x) = ?$
(A) $e^{\tan(x)}$; (B) $e^{\tan(x)} \tan(x)$;
(C) $e^{\tan(x)} \sec(x) \tan(x)$; (D) $e^{\tan(x)} \sec^2(x)$.

Ans: D [103 學年度]

多選題

1. Suppose that f'' and g'' exist. Which of the following statements are **true**?

- (A) $(f(x)g(x))'' = f(x)g''(x) + f''(x)g(x)$.
(B) $f(x)g''(x) - f''(x)g(x) = \frac{d}{dx}[f(x)g'(x) - f'(x)g(x)]$.
(C) $\frac{d^2}{dx^2}[f(g(x))] = f''(g(x))[g'(x)]^2 + f'(g(x))g''(x)$.
(D) $\frac{d}{dx}(f(x + g(\cos x))) = f'(x + g(\cos x))(1 + g'(\sin x))\cos x$.

Ans: BC [100 學年度]