

$$2B) g(x) = e^{3x} (x^3 - 7)^4$$

$$g'(x) = e^{3x} \cdot \underbrace{4(x^3 - 7)^3 \cdot 3x^2}_{3x^2 + 7x^3} + (x^3 - 7)^4 \cdot 3e^{3x}$$

$$3x^2 + 7x^3 \\ x^2(3 + 7x)$$

$$g'(x) = \underline{12x^2} e^{3x} \underline{(x^3 - 7)^3} + \underline{3e^{3x}} \underline{(x^3 - 7)^4}$$

$$GCF = 3e^{3x} (x^3 - 7)^3$$

$$g'(x) = 3e^{3x} (x^3 - 7)^3 [4x^2 + (x^3 - 7)]$$

$$g'(x) = 3e^{3x} (x^3 - 7)^3 (x^3 + 4x^2 - 7)$$

$$3A) f(x) = \frac{(5x^2 - 7)^5}{(3x + 2)^4}$$

$$f'(x) = \frac{\underbrace{(3x+2)^4}_{\text{BOT}} \cdot \underbrace{5(5x^2-7)^4 \cdot 10x}_{\text{der TOP}} - \underbrace{(5x^2-7)^5}_{\text{TOP}} \cdot \underbrace{4(3x+2)^3 \cdot 3}_{\text{der BOT}}}{(3x+2)^8}$$

$$f'(x) = \frac{\underbrace{50x(3x+2)^4}_{\text{BOT}^2} (5x^2 - 7)^4 - 12(3x+2)^3 (5x^2 - 7)^5}{(3x+2)^8}$$

$$f'(x) = \frac{2 \cancel{(3x+2)^4} (5x^2 - 7)^4 \left[\underbrace{25x(3x+2) - 6(5x^2 - 7)}_{75x^2 + 50x - 30x^2 + 42} \right]}{(3x+2)^{8 \cdot 5}}$$

$$f'(x) = \frac{2(5x^2 - 7)^4 (45x^2 + 50x + 42)}{(3x+2)^5}$$

$$3B) \quad g(x) = \frac{e^{5x}}{(\sin x)^2}$$

$$g'(x) = \frac{(\sin x)^2 \cdot 5e^{5x} - e^{5x} \cdot 2(\sin x)' \cdot \cos x}{(\sin x)^4}$$

$$g'(x) = \frac{e^{5x} \cdot \cancel{\sin x} (5 \sin x - 2 \cos x)}{(\sin x)^{4-3}}$$

$$g'(x) = \frac{e^{5x} (5 \sin x - 2 \cos x)}{\sin^3 x}$$

$$3C) \quad h(x) = \frac{\tan x}{x}$$

$$h'(x) = \frac{x \cdot \sec^2 x - \tan x}{x^2}$$