

Derivati

$$f(x) = (x-1)(x-2) \Rightarrow f'(x) = (x-2) + (x-1) = \underline{\underline{2x-3}}$$

$$g(x) = \frac{x^2}{(3x-1)^2} \Rightarrow g'(x) = \frac{2x(3x-1)^2 - 3 \times 2(3x-1)x^2}{(3x-1)^4} = \frac{2x(9x^2 - 6x + 1) - 6(3x^3 - x^2)}{(3x-1)^4}$$

$$= \frac{18x^3 - 12x^2 + 2x - 18x^3 + 6x^2}{(3x-1)^4} = \frac{2x - 6x^2}{(3x-1)^4} = \frac{2x(1-3x)}{(3x-1)^4}$$

$$= \underline{\underline{\frac{-2x}{(3x-1)^3}}}$$

$$h(x) = \left(2x + \frac{1}{3} - \frac{1}{x}\right)^3 \Rightarrow h'(x) = 3\left(2x + \frac{1}{3} - \frac{1}{x}\right)^2 \times \left(2 + \frac{1}{x^2}\right)$$

$$= \underline{\underline{\frac{3(2x^2+1)}{x^2} \times \left(2x + \frac{1}{3} - \frac{1}{x}\right)^2}}$$

$$i(x) = \cos(3x + \pi/4) \times \sqrt{x^2 + 1}$$

$$\Rightarrow i'(x) = \left(-3 \sin(3x + \pi/4) \times \sqrt{x^2 + 1}\right) + \left(\cos(3x + \pi/4) \times \frac{2x}{2\sqrt{x^2 + 1}}\right)$$

$$= \frac{-3 \sin(3x + \pi/4) \sqrt{x^2 + 1} + x \cos(3x + \pi/4)}{\sqrt{x^2 + 1}}$$

$$\underline{\underline{\frac{-3 \sin(3x + \pi/4) \sqrt{x^2 + 1} + x \cos(3x + \pi/4)}{\sqrt{x^2 + 1}}}}$$