Good afternoon

$\int \frac{1}{3x^2-2}\,6x\,dx = \ln(3x^2-2)+C$

Suppose a derivative is taken and the result is $f'(x) = \frac{6x}{3x^2-2}$ What was f(x)?

$f'(x) = \frac{1}{3x^2-2}\cdot 6x$ $f(x) = \ln(3x^2-2)$

Write the equation of the line tangent to $y = x^3 e^{x^2}$ (f g) at the point where x=1 (No calc)

$f: x^3$ $g: e^{x^2}$

$f': 3x^2$ $g': e^{x^2}\cdot 2x$

$y - y_1 = m(x - x_1)$

$y(1) = 1^3 e^{1^2} = e$

$y - e = m(x-1)$

$y' = 3x^2 e^{x^2} + 2x\cdot x^3\cdot e^{x^2}$

$y'(1) = 3\cdot 1\cdot e^1 + 2(1)(1)^3\cdot e^{1^2}$

$3e + 2e$

$5e$

$y - e = 5e(x-1)$

Reminders:

tutoring tomorrow 4-5p assessment Friday

Rules from a table

x	$f(x)$	$f'(x)$	$g(x)$	$g'(x)$
1	2	2	1	1
2	4	0	2	1
3	2	$-\frac{3}{2}$	3	1
4	1	-1	4	1

Part 1) Given $h_1(x) = f(x) \cdot g(x)$, find $h_1'(4)$

Part 2) Given $h_2(x) = \dfrac{f(x)}{g(x)}$, find $h_2'(4)$

Part 3) Given $h_3(x) = (f(x))^2$, find $h_3'(2)$

Part 4) Given $h_4(x) = f(g(x))$, find $h_4'(2)$

① $h(x) = f(x)\,g(x)$

$h'(x) = f'(x)\,g(x) + f(x)\,g'(x)$

$h'(4) = f'(4)\,g(4) + f(4)\,g'(4)$

$(-1)(4) + (1)(1) \rightarrow -4 + 1 = -3$

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(2) $h = \frac{f}{g}$

$h' = \frac{f'g - fg'}{g^2} : \frac{f'(4)g(4) - f(4)g'(4)}{g(4)^2}$

$\frac{-5}{(4)^2} = -5/16$

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(3) $h = (f(x))^2$

$h'(x) = 2(f(x))^1 \cdot f'(x)$

$h'(2) = 2(f(2))\, f'(2)$

$2(4) \cdot 0 = 0$

(4) $h = f(g(x))$

$h' = f'(g(x)) \cdot g'(x)$

$h'(2) = f'(g(2)) \cdot g'(2)$

$f'(2) \cdot 1$

$0 \cdot 1 = 0$