$3e^{2x}+1$
$6e+1$

Quiz 4

① $f(x) = \frac{4\sqrt{x}}{3e^{2x}+x^2} = \frac{4x^{1/2}}{3e^{2x}+1}$ ← Hi

$g(x) = \frac{(3e^{2x}+1)(4x^{1/2})' - (4x^{1/2})(3e^{2x}+1)}{(3e^{2x}+1)}$

$g(x) = \frac{(6e^{x})(4x^{1/2})' - (4x^{1/2})(6e^{x})}{(6e^{x})}$

② $h(x) = 2x^7 f(x)$

$\frac{d}{dx}[2fx^8] \rightarrow 2f \cdot \frac{d}{dx}[x^8] \rightarrow 2f \cdot 8x^7$

$\rightarrow 16fx^7$

③ $g(x) = 2(4x^2-5x)^3$

$= 2 \cdot \frac{d}{dx}[(4x^2-5x)^3]$

youtube: $= 2 \cdot 3(4x^2-5x)^2 \cdot \frac{d}{dx}[4x^2-5x]$

$6(4x^2-5x)^2(4 \cdot \frac{d}{dx}[x^2] - 5 \cdot \frac{d}{dx}[x])$

$= 6(4x^2-5x)^2(4 \cdot 2x - 5 \cdot 1)$

$= 6x^2(4x-5)^2(8x-5)$

(4)

a) $\frac{d}{dx}[f(x)g(x)]$ at $x=3$ → (3): $f'(x)g(x) + f(x)g'(x)$

$f'(3)g(3) + f(3)g'(3)$

$= (10)(4) + (2)(7)$

b) $\frac{d}{dx}\left[\frac{f(x)}{g(x)}\right]$ at $x=2$ (2): $\frac{g(x)f'(x) - f(x)g'(x)}{g(x)^2}$

$= \frac{(4)(-1) - (1)(5)}{(4)^2}$

(3) $2(4x^2+5x)^2 \quad (4x^2-5x)^1$

Proper way: $16x^2(4x-5)^2(8x-5)$

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