MATH 16B Sec. 4.5 - EXTRA PROBLEMS

(1) FIND AN EQUATION OF THE TANGENT LINE TO THE GRAPH OF $f(x) = 5\ln x + 8\sqrt{x}$ AT THE POINT $(1, f(1))$.

(2) FIND THE RELATIVE EXTREMA OF $f(x) = x^2(\ln x)^2$.

DIFFERENTIATE THE FOLLOWING FUNCTIONS:

(3) $y = \ln(e^{5x} + 2^x)$

(4) $y = \log_2(\cos 3x + \tan\sqrt{x})$

* (5) $y = \ln(\ln x)$

(6) $y = \dfrac{(\ln 8x)^3}{x^2}$

* (7) $y = \ln(\sin^5 2x)$

(8) $y = \cot(5^{x^2})$

* (9) $y = \ln(x + \sqrt{4 + x^2})$

* (10) $y = \ln(\sec x)$

* (11) $y = \ln(\sec x + \tan x)$

(12) $y = \ln\left(\dfrac{\sqrt[4]{x}\,(e^{2x}+7)^5}{3\sqrt{x}\,(5x+8)^9}\right)$

(13) $y = (e^{4x} + x^2)^{5x}$

(14) $y = (x^4 + 3^x)^{\log_5 x}$

(15) $y = 3^{1/x}\, x^{\sqrt{x}}$

* (SIMPLIFY YOUR ANSWER.)

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(16) IF $f(x) = \ln x$, USE THE DEFINITION OF THE DERIVATIVE AS A LIMIT TO FIND $f'(x)$.
