Calcul 42S

Unité : Dérivé : Mini Quiz Leçon 2 : Fct trigonométrique et Exponentielle/Logarithmique

Nom : ______________________ /28 Date : ______________________

1. Trouve la dérivée des fonctions suivantes : /12

a) $y = 13\cos 2x$ /2

$y' -13\sin 2x \cdot 2$

$y' = -26\sin 2x$

b) $y = 2\sin 5x - \tan 2x$ /2

$y' = 2\cos 5x \cdot 5 - \sec^2 2x \cdot 2$

$y' = 10\cos 5x - 2\sec^2 2x$

$\rightarrow 3(\cos x^3 - 5x)^2$

c) $y = 3\cos^2(x^3 - 5x)$ /2

$y' = 6\cos(x^3-5x) \cdot -\sin(x^3-5x)(3x^2-5)$

$y' = -6(3x^2-5)\cos(x^3-5x)\sin(x^3-5x)$

d) $y = 2\sin^3 7x \cos x$ /2

$y' = 6\sin^2 7x \cos 7x \cdot 7 \cdot \cos x + (-\sin x)(2\sin^3 7x)$

$y' = 42\sin^2 7x \cos 7x \cos x - 2\sin x \sin^3 7x$

e) $f(x) = x^3 csc x^3$ /2

$f'(x) = 3x^2 \csc x^3 + (-\csc x^3 \cot x^3 \cdot 3x^2 \cdot x^3$

$= 3x^2\csc x^3 - 3x^5 \csc x^3 \cot x^3$

$f'(x) = 3x^2 \csc x^3 (1 - x^3 \cot x^3)$

f) $f(x) = \dfrac{cos2x}{sin5x}$ /2

$f'(x) = \dfrac{-2\sin 2x \sin 5x - 5\cos 5x \cos 2x}{\sin^2 5x}$

2. Trouve y''. /4

a) $y = \cos x^2$ /2

$y' = -2x\sin x^2$

$y'' = -2\sin x^2 + \cos x^2 \cdot 2x \cdot -2x$

$y'' = -2\sin x^2 - 4x^2\cos x^2$

b) $y = \sec(x^2 + 1)$ /2

$y' = \sec(x^2+1)\tan(x^2+1) \cdot 2x$

$y' = 2\sec(x^2+1)\tan(x^2+1) +$

$2\sec(x^2+1)\,2x^2\tan^2(x^2+1)$

$+ 2\sec(x^2+1)\,2x^2\sec^2(x^2+1)$

$y' = 2\sec(x^2+1)[\tan(x^2+1) + 2x^2\tan^2(x^2+1) + 2x^2\sec^2(x^2+1)$

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3. Trouve la dérivée. /12

a) $y = \frac{-7x^2}{e^{3x}}$ /2 b) $y = 6^x \cdot x$ /2 c) $y = \ln(4-5x^2)$ /2

a) $y' = \frac{-14xe^{3x} - e^{3x} \cdot 3 \cdot -7x^2}{(e^{3x})^2}$

$y' = \frac{-14xe^{3x} + 21x^2e^{3x}}{e^{6x}}$

c) $y' = \frac{1}{4-5x^2}(-10x)$

$y' = \frac{-10x}{4-5x^2}$

b) $y' = 6^x \ln 6 \cdot x + (1)6^x$

$y' = 6^x(x\ln 6 + 1)$

d) $\log_9(x^7 - x^6 + 3)$ /2 e) f(x) = sinxln(sinx) /2 f) $\log_5(x+3)^6$ /2

d) $y' = \frac{1}{x^7 - x^6 + 3} \log_9 e (7x^6 - 6x^5)$

$y' = \frac{(7x^6 - 6x^5)\log_9 e}{x^7 - x^6 + 3}$

f) $y' = \frac{1}{(x+3)^6} \log_5 e \cdot 6(x+3)^5$

$y' = \frac{6(x+3)^5 \log_5 e}{(x+3)^6}$

$y' = \frac{6}{x+3} \log_5 e$

e) $f'(x) = \cos x \ln \sin x + \frac{1}{\cancel{\sin x}}(\cos x) \cdot \cancel{\sin x}$

$f'(x) = \cos x(\ln \sin x + 1)$