

Calculus WarmUp

Day after 4.4

Find $\frac{dy}{dx}$ for each of the following problems.

1) $y = \log_3(7x+3)$

2) $y = \ln(\sin(5x^4))$

3) $y = \frac{3}{4x} - xe^{2x}$

4) $y = 3^{3x} + \pi^{2x}$

5) $\frac{d}{dx}[f^4(g(x+\tan x))]$

6) $\frac{d}{dx}[\csc(f(x))]$

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Find $\frac{dy}{dx}$ for each of the following problems.

1) $y = \log_3(7x+3)$
 $y' = \frac{1}{7x+3} \cdot \frac{1}{\ln 3} \cdot (7)$

2) $y = \ln(\sin(5x^4))$
 $y' = \frac{1}{\sin(5x^4)} \cdot \frac{1}{\ln e} \cdot \cos(5x^4) \cdot 20x^3$

3) $y = \frac{3}{4x} - xe^{2x}$
 $y = \frac{3}{4}x^{-1} - x \cdot e^{2x}$
 $y' = -\frac{3}{4}x^{-2} - (x \cdot 2e^{2x} + e^{2x} \cdot 1)$
 $y' = -\frac{3}{4x^2} - 2xe^{2x} - e^{2x}$

4) $y = 3^{3x} + \pi^{2x}$
 $y' = 3^{2x} \cdot \ln 3 \cdot 3 + \pi^{2x} \cdot \ln \pi \cdot 2$

5) $\frac{d}{dx}[f^4(g(x+\tan x))]$
 $\frac{d}{dx}[f(g(x+\tan x))]^4$
 $4[f(g(x+\tan x))]^3 \cdot f'(g(x+\tan x)) \cdot g'(x+\tan x) \cdot (1+\sec^2 x)$

6) $\frac{d}{dx}[\csc(f(x))]$
 $-\csc(f(x)) \cdot \cot(f(x)) \cdot f'(x)$