What you'll Learn About

- How to find the derivative of a composite function

A) $y=\sin(x)$

$\frac{dy}{dx} = 1\cos x \cdot 1 = \cos x$

(1: derivative of angle)

B) $y=\sin(x^2-4)$

$y' = \cos(x^2-4) \cdot 2x$

(2x: derivative of angle)

C) $y=\cos^2(3x)$

$y = [\cos(3x)]^2$

$y' = 2[\cos(3x)]^1 \cdot (-\sin(3x)) \cdot (3)$

(power rule; d/dx of trig fct; d/dx angle)

$y = x^2$

$y' = 2x^1$

product rule →

D) $y=(\csc x)^2 \cot x$

$y' = (\csc x)^2 \cdot (-\csc^2 x) + (\cot x)[2\csc x(-\csc x\cot x)]$

(power rule; d/dx (csc x); $\frac{d}{dx}(\csc x)^2$)

$y' = -\csc^4 x - 2\cot^2 x\csc^2 x$

$3[2\cdot 4 - 7\cdot 5]$

	E) $y = 5\sqrt{\sin(2x) + \cos(2x)}$ $y = 5\left(\sin(2x) + \cos(2x)\right)^{1/2}$ $y' = 5 \cdot \frac{1}{2}\left[\sin(2x) + \cos(2x)\right]^{-1/2} \cdot \left(\cos(2x)\cdot 2 - \sin(2x)\cdot 2\right)$ power rule *E)* $y = (\sin x + \cos x)^{-2}$ $y' = -2(\sin x + \cos x)^{-3} \cdot (\cos x \cdot 1 - \sin x \cdot 1)$ $y' = \frac{-2(\cos x - \sin x)}{(\sin x + \cos x)^3}$ *F)* $y = \frac{1}{\left(\sin(x^3) + \cos(x^3)\right)^4}$ $y = \left(\sin(x^3) + \cos(x^3)\right)^{-4}$ $y' = -4\left[\sin(x^3) + \cos(x^3)\right]^{-5} \cdot \left(\cos(x^3)\cdot 3x^2 - \sin(x^3)\cdot 3x^2\right)$

P.160 14, 15, 17, 18

21-28

(15) $y = (\sin x)^{-5}$

$\frac{dy}{dx} = -5(\sin x)^{-6} \cdot \cos x \cdot 1$

$y = [\cos(7x)]^2$

$y' = 2[\cos(7x) \cdot -\sin(7x) \cdot 7]$