U) Suppose u and v are differentiable functions at x = 2 and
u(2) = 3, $u'(2) = 3$, v(2)=1, $v'(2) = 2$

i) Find $\frac{d}{dx}(uv)$

ii) Find $\frac{d}{dx}\left(\frac{u}{v}\right)$

$y = 1x$

$m = 1$

$dy/dx = 1$

$y' = 1$

$y = x$

$\frac{dy}{dx} = \frac{dx}{dx}$

$\frac{dy}{dv} = 1$

iii) Find $\frac{d}{dx}(3u - 2v + 2uv)$

$\frac{d}{dx}(3u - 2v + 2uv) = 3\frac{du}{dx} - 2\frac{dv}{dx} + 2u\frac{dv}{dx} + v\left(2\frac{du}{dx}\right)$

$3u' - 2v' + 2uv' + 2vu'$

$(2u)(v)$

V) Find the derivative of y = x with respect to x

W) Find the derivative of y = x with respect to t

$y = x$

$\frac{dy}{dt} = \frac{dx}{dt}$

X) Find the derivative of y = x with respect to P

What you'll Learn About

- How to find the derivative of a trig function

A) $y = 5 + x^2 - \tan x$

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$\frac{dy}{dx} = 2x - \sec^2 x$

B) $y = x\sin x$

$y = (x)(\sin x)$

$\frac{dy}{dx} = x\cos x + \sin x(1)$

$\cot^2\theta = (\cot\theta)^2$

C) $y = \frac{4}{\cot\theta}$

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$\frac{dy}{d\theta} = \frac{\cot\theta(0) - 4(-\csc^2\theta)}{\cot^2\theta}$

$\frac{dy}{d\theta} = \frac{4\csc^2\theta}{\cot^2\theta}$

C) $y = \frac{4}{\cot\theta} = \frac{4}{\left(\frac{1}{\tan\theta}\right)} = 4\tan\theta$

$\frac{dy}{d\theta} = 4\sec^2\theta$

D) $y = \frac{\sin\theta - \cos\theta}{\sec\theta + \csc\theta}$

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$\frac{dy}{d\theta} = \frac{(\sec\theta + \csc\theta)(\cos\theta + \sin\theta) - (\sin\theta - \cos\theta)(\sec\theta\tan\theta - \csc^2\theta)}{(\sec\theta + \csc\theta)^2}$