

Calculate the following derivatives:

$$\frac{d}{dx} \sin(3x) = \cos(3x) \cdot 3$$

$$\frac{d}{dx} \cos(4x) = -\sin(4x) \cdot 4$$

$$\frac{d}{dx} \tan(5x) = \sec^2(5x) \cdot 5$$

$$\frac{d}{dx} \sin(x^2) = \cos(x^2)(2x)$$

$$\frac{d}{dx} \sin(3x^4) = \cos(3x^4)(12x^3)$$

$$\frac{d}{dx} \tan(x^4+2) = \sec^2(x^4+2)(4x^3)$$

$$\frac{d}{dx} \cos(3x^{10}) = -\sin(3x^{10})(30x^9)$$

$$\frac{d}{dx} \csc(x^2) = -\csc(x^2)\cot(x^2) \cdot 2x$$

$$\frac{d}{dx} \sec(x^2+2x+3) = \sec(x^2+2x+3)\tan(x^2+2x+3)(2x+2)$$

$$\frac{d}{dx} \cot(x^4) = -\csc^2(x^4)(4x^3)$$

$$\frac{d}{dx} \sin(\cos x) = \cos(\cos x)(-\sin x)$$

$$\frac{d}{dx} 4 \tan(\sec x) = 4 \sec^2(\sec x)(\sec x \tan x)$$

$$\frac{d}{dx} \sqrt{\sin(x)} = \frac{1}{2} (\sin(x))^{-1/2} \cos x$$

$$\frac{d}{dx} (\sec x)^3 = 3(\sec x)^2 \sec x \tan x$$

$$\frac{d}{dx} \sec^4(x) = 4\sec^3 x \cdot \sec x \tan x$$

$$\frac{d}{dx} \csc^4(x) = 4\csc^3(x) (-\csc x \cot x)$$

$$\frac{d}{dx} 4\sqrt{\cos(x)} = 2(\cos x)^{-1/2} (-\sin x)$$

$$\frac{d}{dq} \sec(\sin(q)) = \sec(\sin q) \tan(\sin q) (\cos q)$$

$$\frac{d}{dr} \cos(\tan(r)) = -\sin(\tan r) (\sec^2 r)$$

$$\frac{d}{dy} (\cos(y))^4 = 4(\cos y)^3 (-\sin y)$$

$$\frac{d}{dr} \sin(\cos(r^2 + 3r)) = \cos(\cos(r^2 + 3r)) (-\sin(r^2 + 3r)) \cdot (2r + 3)$$

$$\frac{d}{dr} \tan(\sqrt[3]{\sin(r)}) = \sec^2(\sqrt[3]{\sin(r)}) \cdot \frac{1}{3} (\sin r)^{-2/3} (\cos r)$$

$$\frac{d}{ds} \sqrt[3]{\sec(\tan(r))} = \frac{1}{3} (\sec(\tan r))^{-2/3} \sec(\tan r) \tan(\tan r) \cdot \sec^2 r$$

$$\frac{d}{dx} \sin(\sqrt{\cos x}) = \cos \sqrt{\cos x} \cdot \frac{1}{2} (\cos x)^{-1/2} (-\sin x)$$