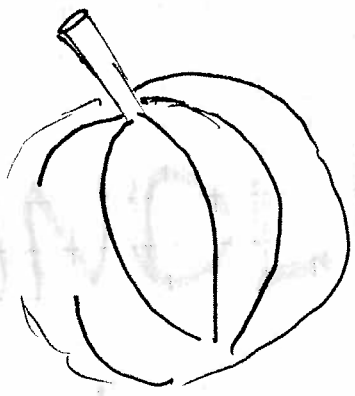
$\frac{d}{dx} \tan^2(x^2+2x+4)$

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

$2\tan(x^2+2x+4) \cdot \frac{d}{dx}\tan(x^2+2x+4)$

$2\tan(x^2+2x+4) \cdot [\sec(x^2+2x+4)] \frac{d}{dx}(x^2+2x+4)$

$= 2\tan(x^2+2x+4) \cdot [\sec(x^2+2x+4)] \cdot (2x+2)$



PUMPKINS

Science Buddies

$(S \circ M \circ B) = \sin(8a^2+4)^2$

$S(x) = \sin x$

$M(x) = x^2$

$B(a) = 8a^2+4$

$= \sin(8a^2+4)^2$

$= \cos a\,(8a^2+4) \cdot \frac{d}{da}(g \circ h)$

$= \cos x\,(8a^2+4) \cdot \frac{d}{da}(8a^2+4)^2$

$= \cos(8a^2+4) \cdot \frac{d}{da}(8a^2+4)^2 \cdot \frac{d}{da}\,8a^2+4$

$= \cos(8a^2+4) \cdot 2(8a^2+4) \cdot \underline{16}\,a$

$= 32a \cos(8a^2+4) \cdot 8a^2+4 = \text{Answer}$

Chain Rule!

Team Kickass

$b(x) = 5x+2$
$m(x) = \sin(4e)$
$s(x) = x^2$

$\frac{d}{dx}(s \circ m \circ b)$

$[\sin(4e^{5x+2})]^2$

$= 2(\sin 4e^{5x+2}) \frac{d}{dx}(\sin 4e^{5x+2})$
$= 2(\sin 4e^{5x+2}) \cos(4e^{5x+2}) \frac{d}{dx}(4e^{5x+2})$
$= 2(\sin 4e^{5x+2}) \cos(4e^{5x+2}) 4e \frac{d}{dx} 5x+2$
$= 2(\sin 4e^{5x+2}) \cos(4e^{5x+2}) 4e \cdot 5$
$= 40(\sin 4e^{5x+2}) \cos(4e^{5x+2}) e^{5x+2}$

Team Diesel

Chain Rule

$$\frac{d}{dx}(f \circ g) = f'(g(x)) \cdot g'(x)$$

$$\frac{d}{dx}(f \circ g \circ h) = f'(g \circ h) \cdot \frac{d}{dx}(g \circ h)$$

$t(x) = x^2 + 4x + 4$

$s(x) = \sin(x)$

$c(x) = e^x$

$$(s \circ t \circ c)(x) = \sin(e^{2x} + 4e^x + 4)$$

$$= \frac{d}{dx}(e^{2x} + 4e^x + 4$$

$$= \cos(e^{x^{(2)}} + 4e^x + 4)(e^{2x} \cdot \frac{d}{dx}(2x) + 4e^x)$$

$$= \cos(e^{2x} + 4e^x + 4)(2e^{2x} + e^x)$$

Connor Payne, Stanley Tucker, Tyler Frost

That Diesel

$$F(x) = \cos^2(x^2+3)$$

$$F'(x) = 2(\cos(x^2+3))^1 \cdot \frac{d}{dx}\cos(x^2+3)$$

$$= 2\cos(x^2+3) \cdot -\sin(x^2+3) \cdot \frac{d}{dx}\, x^2+3$$

$$= 2\cos(x^2+3) \cdot -\sin(x^2+3) \cdot 2x$$

We Love Math

Krystina

Jessica

Stefania

SECTION 3.4
GROUP PROB.

CIVARC

J. KOHLHEPP
S. MANCE
R. D'SOUZA

FIND THE DERIVATIVE OF THE FUNCTION:

$$g(x) = \left(\frac{x-2}{2x+1}\right)^9$$

COMBINE:

- POWER RULE: $\frac{d}{dx}(x^n) = nx^{n-1}$, n IS ANY REAL #;
- CHAIN RULE: $\frac{d}{dx} f(g(x)) = f'(g(x))\,g'(x)$
- QUOTIENT RULE: $\frac{d}{dx}\left[\frac{f(x)}{g(x)}\right] = \frac{g(x)f'(x) - f(x)g'(x)}{(g(x))^2} = \frac{gf' - fg'}{g^2}$

$$g'(x) = 9\left(\frac{x-2}{2x+1}\right)^8 \frac{d}{dx}\left(\frac{x-2}{2x+1}\right)$$

$$= 9\left(\frac{x-2}{2x+1}\right)^8 \frac{(2x+1)*1 - 2(x-2)}{(2x+1)^2} = \frac{45(x-2)^8}{(2x+1)^{10}}$$