

May 7

Find the derivative of each function

$$f(x) = \sin(x^2)$$

$$g(x) = \ln(4x - 10)$$

$$h(x) = (\sec(9x) + 3)^5$$

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Students will verbally explain how to find the derivative using implicit differentiation

(using the words:
chain rule, factor, y' , etc...)

Junior class meeting Thursday May 8th at lunch in room 115. We need a little more \$\$ for a prom deposit. Come to the meeting with a restaurant night set up and earn extra credit!

$h(x) = f(g(x))$
Find $h'(x)$

$$h'(x) = f'(g(x)) g'(x)$$

$m(x) = [g(x)]^3$
Find $m'(x)$

$$m'(x) = 3(g(x))^2 g'(x)$$

y is a function in terms of x

$n(x) = y^5$
find $n'(x)$

$$n'(x) = 5y^4(y')$$

$$x^5 + y^4 = 3x - y$$

find $\frac{dy}{dx}$

$$x^5 + y^4 = 3x - y$$

$$5x^4 + 4y^3(y') = 3 - 1y'$$

$$\begin{array}{r} 5x^4 + 4y^3(y') - 3 = -1y' \\ -4y^3(y') \qquad \qquad -4y^3(y') \end{array}$$

$$5x^4 - 3 = -1y' - 4y^3(y')$$

$$\frac{5x^4 - 3}{-1 - 4y^3} = \frac{y'(-1 - 4y^3)}{-1 - 4y^3}$$

$$\frac{5x^4 - 3}{-1 - 4y^3} = y' = \frac{dy}{dx}$$

$$x^2y = 4x^3 - y^9$$

find $\frac{dy}{dx}$

$$\begin{aligned}
 (x^2)(y) &= 4x^3 - y^9 \\
 2xy + 1y'(x^2) &= 12x^2 - 9y^8y' \\
 \begin{array}{ccccccc}
 2xy & + & 1y'(x^2) & = & 12x^2 & - & 9y^8y' \\
 -2xy & & +9y^8y' & & +9y^8y' & -2xy &
 \end{array} \\
 \hline
 1y'(x^2) + 9y^8(y') &= 12x^2 - 2xy \\
 y'(x^2 + 9y^8) &= \frac{12x^2 - 2xy}{x^2 + 9y^8} \\
 \frac{dy}{dx} = y' &= \frac{12x^2 - 2xy}{x^2 + 9y^8}
 \end{aligned}$$

Find the derivative in terms of x

$$y^3 + x^4 = 3x - 10y^2$$

$$4x^2y = \sin(x) + e^y$$

$$\tan^{-1}(x) + y^4 = xy^5$$