

March 5

Explain how to take the derivative when you are multiplying functions.

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Students will verbally explain how to find derivative, using the quotient rule.

(using the words:
constant, exponent, sum...)

Quotient Rule:

The derivative of the top function

times

the bottom function

minus

The derivative of the bottom function

times

the top function

all over the bottom squared

The derivative of the top function

times the bottom function

minus

The derivative of the bottom function

times the top function

all over the bottom squared

$$\frac{d}{dx} \left(\frac{f(x)}{g(x)} \right) = \frac{f'(x) g(x) - g'(x) f(x)}{g(x)^2}$$

+

$g'(x)$

$f(x)$ $f'(x)$

$$h(x) = \frac{(2x^2-4)}{(6-x^3)}$$

find $\frac{d}{dx}(h(x))$

$$h(x) = \frac{2x^2-4}{6-x^3}$$

$$h'(x) = \frac{(2(2x) - 4(0x^{-1}))(6-x^3) - (-3x^2)(2x^2-4)}{(6-x^3)^2}$$

$$h'(x) = \frac{(4x)(6-x^3) + 3x^2(2x^2-4)}{(6-x^3)^2}$$

$$m(n) = \frac{4}{4n^3-7n^2+10}$$

find $\frac{dm}{dn}$

$$m(n) = \frac{4}{4n^3-7n^2+10}$$

$$\frac{dm}{dn} = \frac{0(4n^3-7n^2+10) - (4(3n^2-7(2n)+10(0x^{-1}))(4)}{(4n^3-7n^2+10)^2}$$

$$\frac{dm}{dn} = \frac{-4(12n^2-14n)}{(4n^3-7n^2+10)^2}$$

$$y = \frac{(6+7x)(8x^2+12)}{(x^3-6x+9)}$$

find y'

$$y = \frac{(6+7x)(8x^2+12)}{(x^3-6x+9)}$$

derivative of
top using
the product
rule

$$y' = \frac{[7(8x^2+12) + 6x(6+7x)](x^3-6x+9) - (3x^2-6)[(6+7x)(8x^2+12)]}{(x^3-6x+9)^2}$$

Differentiate using the quotient rule

$$1. \quad f(x) = \frac{4x - 5}{3x + 2}$$

$$2. \quad h(x) = \frac{8x^2 - 6x + 11}{x - 1}$$

$$3. \quad h(z) = \frac{8 - z + 3z^2}{2 - 9z}$$

$$4. \quad f(w) = \frac{2w}{w^3 - 1}$$

$$5. \quad G(v) = \frac{v^3 - 1}{v^3 + 1}$$

Turn in during
class