Closure:

For ANY given function, m(x), describe how you could determine m(2x + 1).

Homework: Consider the functions $f(x) = x^3 + 1$, $g(x) = -3x^2$, and $h(x) = -5x$. Determine each of the following.

a. f(4x) b. g(8x - 9) c. f(2x)h(10x – 3) d. $\frac{g(8x)h(-x)}{8}$

e. h(-2x + 3) – g(2x) f. f(2x) + g(-x)

Solutions:

a. $f(4x) = 64x^3 + 1$ b. $g(8x - 9) = -192x^2 + 432x - 243$

c. $f(2x)h(10x - 3) = (8x^3 + 1)*(-50x + 15) = -400x^4 + 120x^3 - 50x + 15$

d. $\frac{g(8x)h(-x)}{8} = \frac{-192x^2 * 5x}{8} = \frac{-960x^3}{8} = -120x^3$

e. h(-2x + 3) – g(2x) = $12x^2+10x-15$

f. f(2x) + g(-x) = $8x^3+1-3x^2=8x^3-3x^2+1$

Super Quick Review

If $b(x) = x^2 + 5$, $c(x) = x^3$, and $d(x) = -3x$, determine each of the following.

1. b(x + 2) - d(-x + 1) 2. $\frac{c(2x)d(4)}{2}$

$b(x)=x^2+5$

$b(x+2)=(x+2)^2+5$

$=(x^2+4x+9)$

$d(x)=-3x$

$d(-x+1)=-3(-x+1)$

$d(-x+1)=(3x-3)$

$(x^2+4x+9)-(3x-3)$

x^2+x+12

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1. b(x + 2) - d(-x + 1) 2. $\frac{c(2x)d(4)}{2}$

$d(x)=-3x$

$d(4)=-3(4)$

$d(4)=-12$

2. $c(x)=x^3$

$c(2x)=(2x)^3$

$c(2x)=8x^3$

$\frac{8x^3 \cdot -12}{2}$

$=\frac{-96x^3}{2}=-48x^3$

Given any two functions, m(x) and n(x), how will the outputs of h(x) and g(x) DIFFER?

$h(x) = (m + n)(3)$

$g(x) = (m + n)(3x)$

Oct 8-12:52 PM

Describe the similarities and differences between the expressions, in regards to how they can be simplified:

$$\frac{6x^2 + 8x}{4x} \qquad \frac{6x^2 \pm 8}{4x}$$

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