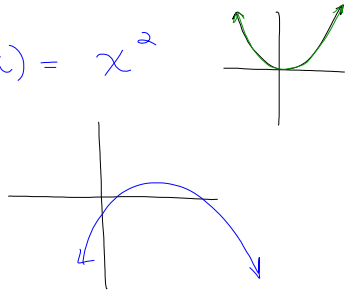
October 5, 2015

$f(x) = x^2$



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Operations on Functions

① Addition of Functions

$f(x) + g(x)$

(a) $f(x) = -x^2 + 2x - 5$

(b) $g(x) = 5x^5 - 3x^2 + 4$

$(f+g)(x) = 1(-x^2+2x-5) + 1(5x^5-3x^2+4)$

$= -x^2 + 2x - 5 + 5x^5 - 3x^2 + 4$

Combine Like Terms

* Same Variable
* Same Exponent

$= 5x^5 - 4x^2 + 2x - 1$

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$f(x) = \frac{x+3}{x-6}$

$g(x) = \frac{2x}{x+5}$

$(f+g)(x) = \frac{x+3}{x-6} + \frac{2x}{x+5}$

LCD: $(x-6)(x+5)$

$= \frac{(x+3)(x+5) + (2x)(x-6)}{(x-6)(x+5)}$

$= \frac{x^2+8x+15+2x^2-12x}{(x-6)(x+5)}$

$= \frac{3x^2-4x+15}{(x-6)(x+5)}$

$3x^2-4x+15$

$(3x-5)(x-3)$

F: $3x \cdot x = 3x^2$ ✓

O: $3x \cdot -3 = -9x$?

I: $-5 \cdot x = -5x$) $-14x$

L: $-5 \cdot -3 = 15$ ←

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② Difference

$f(x) - g(x)$

$f(x) = 4x^2 + 9x - 5$

$g(x) = -5x^2 + 12x - 6$

$1(4x^2+9x-5) - 1(-5x^2+12x-6)$

$4x^2 + 9x - 5 + 5x^2 - 12x + 6$

$9x^2 - 3x + 1$

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