September 28, 2016

$g(x) = -x^2 - 1 - 2x$

$f(x) = x + 5$

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

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

$= -x^2 - 6 - 3x$

$= -x^2 - 3x - 6$

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#2) $(g f)(-4) = [-(-4)^2 - 1 - 2(-4)][-4+5]$

$= [-16 - 1 + 8][1]$

$= [-17 + 8][1]$

$= [-9][1]$

$= -9$

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#3) $(g \circ f)(x) = g(f(x))$

$= -(x+5)^2 - 1 - 2(x+5)$

$= -[(x+5)(x+5)] - 1 - 2x - 10$

$= -[x^2 + 10x + 25] - 1 - 2x - 10$

$= -x^2 - 10x - 25 - 1 - 2x - 10$

$= -x^2 - 12x - 36$

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Slope: $m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{\text{Rise}}{\text{Run}} = \frac{\Delta y}{\Delta x}$

↓

Rate of Change

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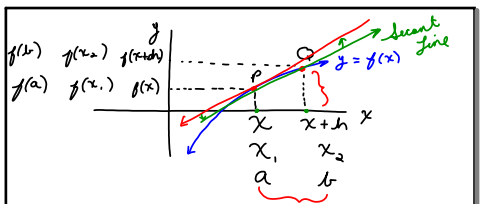

① $m = \frac{y_2 - y_1}{x_2 - x_1}$

② Avg. Rate of Change

$\frac{f(b) - f(a)}{b - a}$

③ $\frac{f(x+h) - f(x)}{x + h - x}$

$\frac{f(x+h) - f(x)}{h}$

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