Correlation chart for AP Precalculus LO 1.2.A Average and instantaneous rates of change

College Board AP Precalculus LO and EK codes are found in the Course and Exam Description available at https://apcentral.collegeboard.org/courses/ap-precalculus/course
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Example	Requirement	Title	Reward	Correlation
	☐ Have function f mapping input values of independent variable x to corresponding output values of dependent variable y ☐ Have interval $[a, b]$ in the domain of f ☐ m is a real number ☐ m is interpreted as a constant rate of change ☐ Sustaining m over the change in x-values $\Delta x = b - a$ would yield a change Δy in y ☐ $\Delta y = f(b) - f(a)$	→ Definitions of **average rate of change** ←	m is the **average rate of change** of function f with respect to x on the interval $[a, b]$.	**AP Precalculus** EK 1.2.A.1
	☐ Have function f mapping input values of independent variable x to corresponding output values of dependent variable y ☐ Have interval $[a, b]$ in the domain of f ☐ $m = \frac{f(b)-f(a)}{b-a}$	→ Computing formula for **average rate of change** ←		
	☐ Have function f mapping input values of independent variable x to corresponding output values of dependent variable y ☐ a is an x-value in the domain of f ☐ Consider a change δx in x that is "small enough" so that we speak as though we have not departed from the point $(a, f(a))$ ☐ During this change δx in x, the constant rate of change of y with respect to x is called $IROC$	→ Definition of **[instantaneous] rate of change** ←	$IROC$ is the **[instantaneous] rate of change** of function f with respect to x at a.	**AP Precalculus** EK 1.2.A.2
	☐ Have function f mapping input values of independent variable x to corresponding output values of dependent variable y ☐ a is an x-value in the domain of f ☐ x_1 and δx are real numbers	→ Approximation formula for **[instantaneous] rate of change** ←	$ApproxIROC$ approximates the **[instantaneous] rate of change** of function f with respect to x at a.	

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	☐ Interval $[x_1, x_1 + \delta x]$ contains a ☐ δx is "small enough" so that we speak as though we have roughly not departed from the point $(a, f(a))$ no matter which x-value in $[x_1, x_1 + \delta x]$ we might go to □ $ApproxIROC \approx \frac{f(x_1+\delta x)-f(x_1)}{\delta x}$			
	☐ Have function f mapping input values of independent variable x to corresponding output values of dependent variable y ☐ a & b are x-values in the domain of f ☐ Interval $[x_1, x_1 + \delta x_1]$ contains a and interval $[x_2, x_2 + \delta x_2]$ contains b ☐ δx_1 & δx_2 are "small enough" so that we speak as though we have roughly not departed from the point $(a, f(a))$ no matter which x-value in $[x_1, x_1 + \delta x_1]$ we might go to and as though we have roughly not departed from the point $(b, f(b))$ no matter which x-value in $[x_2, x_2 + \delta x_2]$. □ $ApproxIROC_1 \approx \frac{f(x_1+\delta x_1)-f(x_1)}{\delta x_1}$ □ $ApproxIROC_2 \approx \frac{f(x_2+\delta x_2)-f(x_2)}{\delta x_2}$	→ Approximation method for **comparing** two instantaneous rates of change from different parts of the same graph	Comparing $ApproxIROC_1$ and $ApproxIROC_2$ is a **method for** (approximately) **comparing** the [instantaneous] **rates of changes** at $x = a$ and $x = b$.	**AP Precalculus** EK 1.2.A.3