

M3Y & M3Z - Advanced Placement Precalculus

Average Rate of Change

September 18, 2023

Dear Students,

Please carefully review the notes from our classes last week (September 11-15).

Once you finish studying, proceed by answering the following problems. Please remember that this Wednesday (Sept. 20) we will have an assessment on these topics.

1. Find the *average rate of change* for each of the following pairs of function, interval:

- $f(x) = 3x^2 - 4$, $[1, 4]$
- $g(x) = 2^x - 1$, $[0, 3]$
- $h(x) = \sqrt{x^2 - 3x + 6}$, $[-1, 5]$
- $k(x) = -2x^2 + x + 3$, $[-4, -1]$

2. Prove that the average rate of change of $g(x) = 4x - 5$ over an interval $[\alpha, \beta]$ is equal to 4.

3. Find the average rate of change of $h(x) = \alpha x^2 + \beta x + \gamma$ over the interval $[1, 3]$.

4. What can be inferred for the average rate of change of a function f over an interval $[\alpha, \beta]$ in which f is ...

- increasing & concave up
- increasing & concave down
- decreasing & concave up
- decreasing & concave down

Your work should be uploaded electronically and not turned in by email or on paper.

Mr. Artopoulos & Mr. Demopoulos