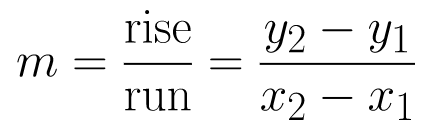
**Average Rate of Change: Linear, Quadratic, and Exponential Functions**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ functions have a common \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate of change.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ functions have a common \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ rate of change.



How to solve for Average rate of change:

Example 1: Find the average rate of change over the interval [-1, 2]

a) y = 2x + 3 b) y = x2 – 1 c) y = 2x + 1

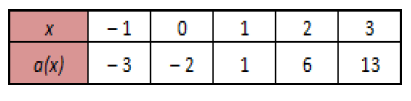
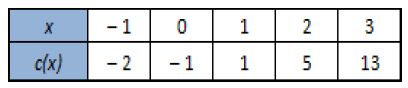
Which functions has the greatest average rate of change over the interval [-1, 2]?

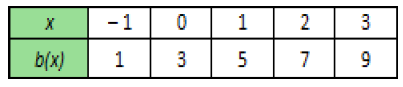
Example 2: Find the average rate of change from x = 2 to x = 5 for each function.

a) y = 2x + 3 b) y = x2 – 1 c) y = 2x + 1

Which function has the greatest average rate of change from 2 to 5?

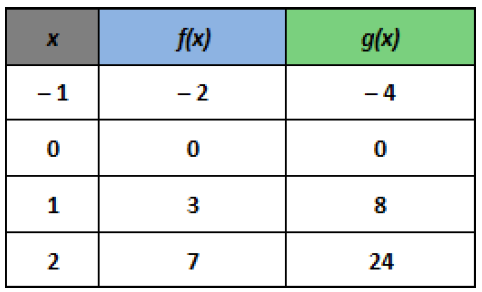
Conclusion: In general, as x→ ∞, which function eventually grows at the fastest rate?

Example 3: Find the average rate of change over the interval [-1, 2] for each continuous function displayed by the tables below.

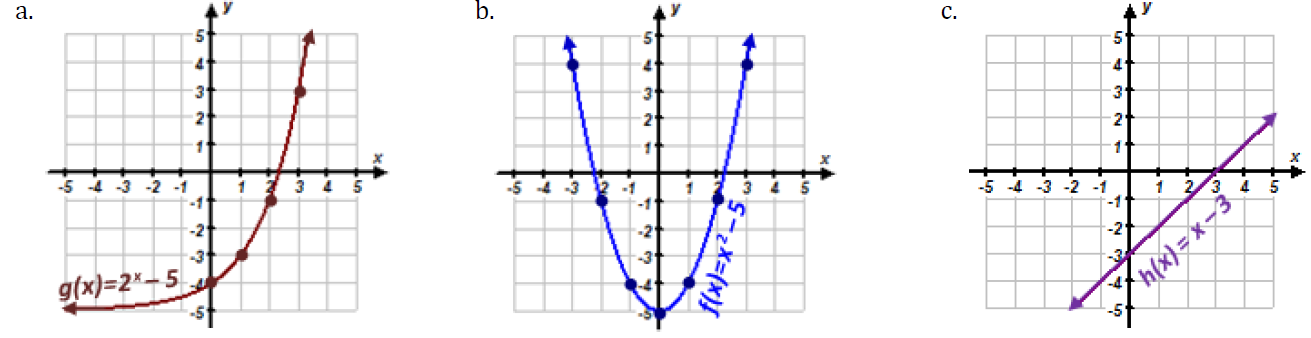
a) b) c)

Which function has the greatest average rate of change?

Example 4: Based on any interval of x in the table provided, which function will always have the greatest average rate of change?



Example 5: Determine the average rate of change for each graph over the interval [1, 3].



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Can you determine which interval for x would produce the same average rate of change for all three functions?