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**MATH 2301 (Barsamian) GW09 Finding Derivatives Graphically Using a Ruler**

The goal: Given the graph of  $f$  on the top axes on the next page, make a graph of  $f'$  on the bottom axes.

On the graph of  $f'$ , the input will be  $x$  and the output will be  $f'(x)$ . Remember the graphical interpretation of  $f'(x)$ :

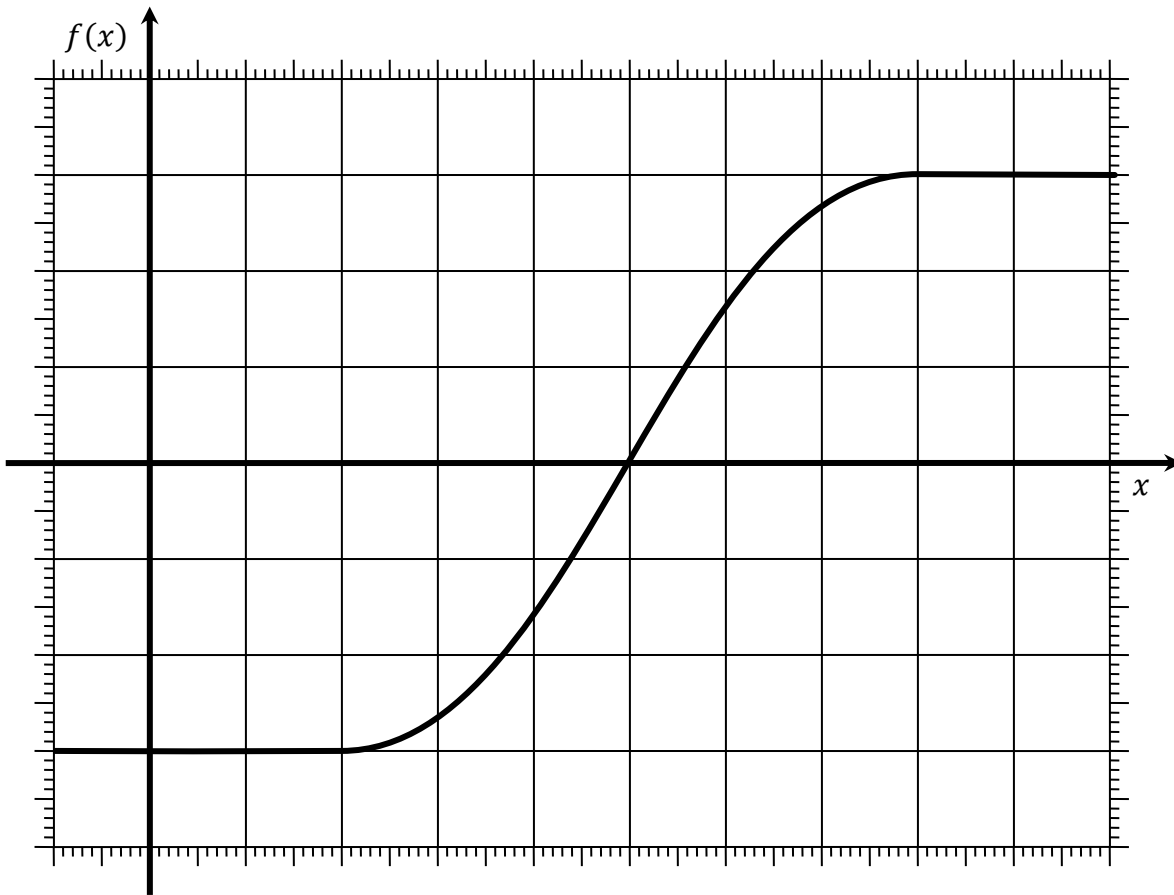
**Definition of the Derivative**

- **symbol:**  $f'(a)$
- **graphical interpretation:**  $f'(a)$  is the number that is the slope of the line tangent to the graph of  $f$  at the point where  $x = a$ .

**Part 1:** Prepare the data for your graph of  $f'$  by filling out the following table.

$x$	what to do on the graph of $f$	$f'(x)$
0	Draw the line tangent to the graph of $f$ at the point where $x = 0$ and find its slope $m$ . This slope $m$ will be the value of $f'(0)$ .	
1	Draw the line tangent to the graph of $f$ at the point where $x = 1$ and find its slope $m$ . This slope $m$ will be the value of $f'(1)$ .	
2	Draw the line tangent to the graph of $f$ at the point where $x = 2$ and find its slope $m$ . This slope $m$ will be the value of $f'(2)$ .	
3	Draw the line tangent to the graph of $f$ at the point where $x = 3$ and find its slope $m$ . This slope $m$ will be the value of $f'(3)$ .	
4	Draw the line tangent to the graph of $f$ at the point where $x = 4$ and find its slope $m$ . This slope $m$ will be the value of $f'(4)$ .	
5	Draw the line tangent to the graph of $f$ at the point where $x = 5$ and find its slope $m$ . This slope $m$ will be the value of $f'(5)$ .	
6	Draw the line tangent to the graph of $f$ at the point where $x = 6$ and find its slope $m$ . This slope $m$ will be the value of $f'(6)$ .	
7	Draw the line tangent to the graph of $f$ at the point where $x = 7$ and find its slope $m$ . This slope $m$ will be the value of $f'(7)$ .	
8	Draw the line tangent to the graph of $f$ at the point where $x = 8$ and find its slope $m$ . This slope $m$ will be the value of $f'(8)$ .	
9	Draw the line tangent to the graph of $f$ at the point where $x = 9$ and find its slope $m$ . This slope $m$ will be the value of $f'(9)$ .	
10	Draw the line tangent to the graph of $f$ at the point where $x = 10$ and find its slope $m$ . This slope $m$ will be the value of $f'(10)$ .	

Part 2 is on the next page.



**Part 2:** Using the  $(x, f'(x))$  data from your table, make a graph of  $f'$ .

