

7. [13 points] f is a continuous, differentiable function defined for all real numbers. Some values of f and its derivative are given in the table below.

x	0	1	2	3	4	5	6	7
$f(x)$	-11.2	-4.0	-1.1	-0.5	-0.1	2.0	7.9	19.6
$f'(x)$	9.9	4.7	1.4	0.2	0.9			

- a. [4 points] Estimate the derivative of f at $x = 5, 6$, and 7 , and fill in the remainder of the table.
- b. [2 points] Estimate $f''(1)$ using the data given.
- c. [4 points] Assuming the concavity of f doesn't change on the interval $5 \leq x \leq 7$, is the graph of f concave up or concave down on that interval? Explain.
- d. [3 points] Using your answer from part (c), is your approximation for $f'(7)$ an overestimate or an underestimate? Explain.