3. [14 points] Let g be a differentiable function defined for all real numbers. A table of some values of g is given below.

w	-1	1	3	5
$g(w)$	-2	3	5	6

Assume that g is always strictly increasing on the interval $[-1, 5]$ and that g' is always strictly decreasing on the interval $[-1, 5]$.

a. [2 points] Estimate $g'(5)$.

Answer: $g'(5) \approx$ _____

b. [4 points] Rank the following quantities in order from least to greatest by filling in the blanks below with the options I-V.

I. 0 II. $g'(1)$ III. $g(1) - g(-1)$ IV. $g'(3)$ V. $\dfrac{g(3) - g(1)}{2}$

_____ $<$ _____ $<$ _____ $<$ _____ $<$ _____

c. [4 points] Find the best possible estimate of $\displaystyle\int_{-1}^{5} (g(w) + 1)\, dw$ using a right hand sum and the data provided. Be sure to write all of the terms in the sum.

d. [1 point] Is your estimate from part (c) an overestimate or underestimate of $\displaystyle\int_{-1}^{5} (g(w) + 1)\, dw$? *You do not need to explain your answer.*

Underestimate Overestimate Impossible to determine

e. [3 points] Find the average value of $g'(w)$ on the interval $[-1, 5]$.

Answer: _____