

1. [11 points]

Some values of the increasing, differentiable function $h(x)$ and its derivative $h'(x)$ are given in the table to the right.

x	-1	1	3	5
$h(x)$	-3	-2	1	3
$h'(x)$	$\frac{1}{2}$	1	2	$\frac{1}{3}$

a. [2 points] Let $W(x) = h\left(\frac{x}{2}\right) \ln(x)$. Find $W'(6)$.

Answer: _____

b. [2 points] Find the average value of $h'(x)$ on the interval $[-1, 5]$.

Answer: _____

c. [3 points] Find $\int_1^3 (4h''(x) + \cos(x)) dx$.

Answer: _____

d. [2 points] Use a right-hand Riemann sum with two equal subdivisions to estimate $\int_1^5 h(x) dx$.
Write out all the terms in your sum, which you do not need to simplify.

e. [2 points] How many equal subdivisions of $[1, 5]$ are needed so that the difference between the left and right Riemann sum approximations of $\int_1^5 h(x) dx$ is exactly 1?

Answer: _____