

5. [10 points] The table below gives several values of a function $q(u)$ and its first and second derivatives. Assume that all of $q(u)$, $q'(u)$, and $q''(u)$ are defined and continuous for all real numbers u .

u	0	1	2	3	4	5	6
$q(u)$	30	23	19	20	24	25	24
$q'(u)$	0	-6	-2	1	3	1	-2
$q''(u)$	-9	5	4	3	2	-5	0

Compute each of the following. Do not give approximations. If it is not possible to find the value exactly, write NOT POSSIBLE.

a. [2 points] Compute $\int_5^2 q''(t) dt$.

Answer: $\int_5^2 q''(t) dt =$ _____

b. [2 points] Compute $\int_1^5 (-2q''(u) + 2u) du$.

Answer: $\int_1^5 (-2q''(u) + 2u) du =$ _____

c. [2 points] Suppose that $q(u)$ is an even function. Compute $\int_{-5}^5 q(u) du$.

Answer: $\int_{-5}^5 q(u) du =$ _____

d. [2 points] Suppose that $q(u)$ is an even function. Compute $\int_{-5}^5 (q'(u) + 7) du$.

Answer: $\int_{-5}^5 (q'(u) + 7) du =$ _____

e. [2 points] Compute the average value of $-5q'(u)$ on the interval $[1, 4]$.

Answer: _____