

5. [16 points] Suppose that $f(x)$ is a function with the following properties:

- $\int_0^1 f(x) dx = -5$.
- $\int_0^3 f'(x) dx = 10$.
- The average value of $f(x)$ on $[1, 1.5]$ is -4 .
- $\int_2^4 x f'(x) dx = 8$.

In addition, a table of values for $f(x)$ is given below.

x	0	1	2	3	4
$f(x)$	-7	-2	-2	m	0

Calculate (a)-(d) **exactly**. Show your work and do not write any decimal approximations.

a. [4 points] $m =$

b. [4 points] $\int_0^{1.5} f(x) dx =$

c. [4 points] $\int_2^4 f(x) dx =$

d. [4 points] $\int_4^{16} f'(\sqrt{x}) dx =$