1. Suppose $\int_2^{12} g(x)\,dx = 5$ and $\int_4^{12} g(x)\,dx = 9$. Find the value of $\int_2^4 3g(x)\,dx$.

2. Suppose that $\int_1^9 f(x)\,dx = -2$ and $\int_1^7 f(x)\,dx = 4$. Find the following values.

    a. $\int_7^1 5f(x)\,dx$

    b. $\int_7^9 f(x)\,dx$

    c. $\int_1^7 \left(4f(x)-2\right)dx$

3. Suppose we are given $f(x) = \begin{cases} 3 & x \le 4 \\ 15-3x & x > 4 \end{cases}$.

    a. Sketch the graph of $y = f(x)$.

    b. Use your graph to evaluate $\int_1^6 f(x)\,dx$

    c. Find the average value of $f(x)$ on the interval [1, 6].