

2. (12 points) Suppose that f and g are continuous functions and $\int_0^2 f(x)dx = 5$ and $\int_0^2 g(x)dx = 13$. Compute the following. If the computation cannot be made because something is missing, explain clearly what is missing.

$$(a) \int_4^6 f(x-4)dx = \int_0^2 f(x)dx = 5$$

$$(b) \int_{-2}^0 2g(-t)dt = 2 \int_0^2 g(t)dt = 2(13) = 26$$

$$(c) \int_2^0 (f(y) + 2)dy = - \int_0^2 f(y)dy - \int_0^2 2dy = -(5) - 4 = -9$$

$$(d) \int_2^2 g(x)dx = 0$$

- (e) Suppose that f is an even function. Compute the average value of f from -2 to 2 .

$$\frac{1}{2 - (-2)} \int_{-2}^2 f(x)dx = \frac{1}{4} \left(2 \int_0^2 f(x)dx \right) = \frac{1}{2}(5) = \frac{5}{2}$$