## Properties of Definite Integrals

1. If 
$$\int_{3}^{7} (f(x) - 4x) dx = 17$$
, find  $\int_{3}^{7} f(x) dx$ .

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, find  $\int_{3}^{7} f(x) dx$ .

6. Find the average value of  $f(x) = \sqrt{9 - x^2}$  on  $(-3, 3)$ .

2. If 
$$\int_{-1}^{2} f(x)dx = a$$
 and  $\int_{-1}^{2} g(x)dx = b$ , find  $\int_{0}^{4} f(x)dx$  if  $f(x)$  is even and  $g(x)$ 

$$\int_{-1}^{2} (2f(x) - 3g(x) + 5)dx.$$
is odd and  $\int_{0}^{4} (2f(x) + 3g(x))dx = 16$ 

7. Find 
$$\int_0^4 f(x)dx$$
 if  $f(x)$  is even and  $g(x)$  is odd and  $\int_{-4}^4 (2f(x) + 3g(x))dx = 16$ .

3. If 
$$\int_{-a}^{a} f(x)^{2} dx = 9$$
 and  $\int_{-a}^{a} g(x)^{2} dx = 5$ , find  $\int_{-a}^{a} (f(x) + g(x))^{2} dx$ .

8. Is 
$$f(x)$$
 an even or odd function so that 
$$\int_{-b}^{a} f(x)dx = -\int_{b}^{-a} f(x)dx$$
 if true?

4. If 
$$g(x)$$
 is an odd function and 
$$\int_{-2}^{4} (2g(x) + 3x) dx = 15$$
, find  $\int_{2}^{4} g(x) dx$ .

9. Find the average value of 
$$f(x) = 5x^5$$
 on  $[-8, 8]$ .

5. If 
$$f(x)$$
 is even and 
$$\int_{-2}^{0} f(x)dx = \alpha,$$
$$\int_{2}^{5} f(x)dx = -1, \text{ find } \left(\int_{-2}^{5} f(x)dx\right)^{2}.$$

10. If  $1 \le f(x) \le 2x$  for 0 < x < 4, find the bounds on average value of f(x) on

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