

A.

The following problems involve properties of definite integrals. Assume that

$$\int_1^4 f(x) dx = 7, \quad \int_2^4 f(x) dx = 5, \quad \int_1^4 g(x) dx = 2. \text{ Compute the following.}$$

1. $\int_1^4 4f(x) dx$

2. $\int_1^4 (f(x) + 3) dx$

3. $\int_3^6 f(x-2) dx$

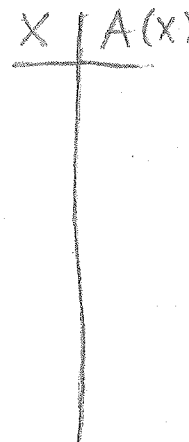
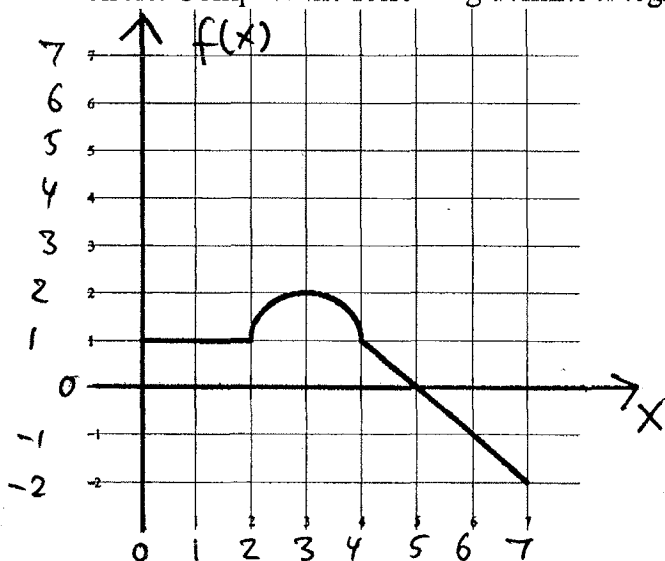
4. $\int_1^4 (f(x) - g(x)) dx$

5. $\int_1^4 (8f(x) - 7g(x)) dx$

6. $\int_1^2 -f(x) dx$

7. $\int_4^1 g(x) dx$

B. Consider the graph of f given below. It is composed of two line segments and a semi-circle. Compute the following definite integrals (Please leave π in your answer)



1. $\int_0^4 f(x) dx$

2. $\int_2^5 f(x) dx$

3. $\int_2^6 f(x) dx$

4. $\int_3^7 f(x) dx$

5. $\int_0^4 (f(x) - 1) dx$

6. $\int_2^5 (f(x-1) + 2) dx$

7. $\int_2^5 (2(f(x-1) + 2)) dx$

8. Let $A(x) = \int_0^x f(t) dt$. Where does $A(x)$ have a global maximum value on the interval $[0, 7]$? Justify your answer.

9. Sketch the graph of $A(x) = \int_0^x f(t) dt$ on the same axes as given above. Note any points of inflection and local extrema.

10. What is $A'(4)$?

MAKE A TABLE.
(Now you need decimals without π .)