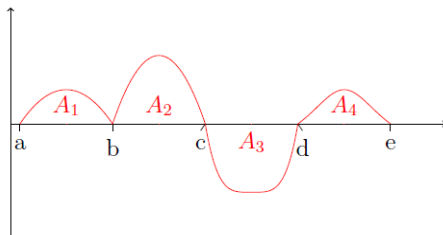


Names: \_\_\_\_\_

Group #: \_\_\_\_\_

1. Imagine the function  $f(x)$  bounds four different regions whose **areas** are indicated below.



Determine the following definite integrals given  $A_1 = 5$ ,  $A_2 = 8$ ,  $A_3 = 9$ , and  $A_4 = 6$ .

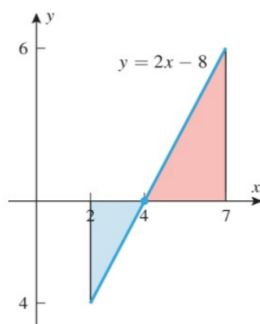
(a)  $\int_a^c f(x)dx$

(c)  $\int_a^d f(x)dx$

(b)  $\int_c^d \frac{1}{3}f(x)dx$

(d)  $\int_b^e -2f(x)dx$

2. Use the graph below to evaluate the following:

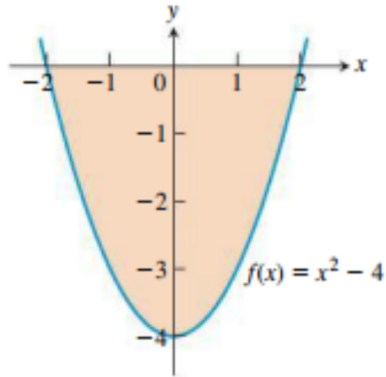


- (a) **Using geometry**, compute the net area between the function  $f(x) = 2x - 8$  and the  $x$ -axis on the interval  $[2, 7]$ .

- (b) Confirm your previous answer by evaluating the definite integral  $\int_2^7 (2x - 8)dx$ .

3. Compute the net area of the following function on the given interval.

$$f(x) = x^2 - 4; [-2, 2]$$



4. Evaluate the following definite integrals. If substitution is used, be sure to clearly indicate  $u$  and  $du$ .

(a)  $\int_1^2 \frac{2}{x^2} dx$

(b)  $\int_0^3 \frac{1}{5x+1} dx$

$$(c) \int_1^3 \left( 3x^2 - \frac{1}{4}x^3 \right) dx$$

$$(d) \int_0^{\pi/4} \tan(\theta) \sec^2(\theta) d\theta$$

$$(e) \int_{-2}^{-1} x \sqrt[4]{x+2} dx$$

$$(f) \int_1^3 \frac{e^{1/x}}{x^2} dx$$