Calculus Worksheet on Integrals and Area   Name _____

1. Which of the following definite integrals is equal to $\displaystyle\lim_{n\to\infty}\sum_{k=1}^{n}\frac{12k}{n}\cos\left(1+\frac{4k}{n}\right)\frac{4}{n}$?

(A) $\displaystyle\int_{1}^{5}12\cos x\,dx$

(C) $\displaystyle\int_{0}^{4}12\cos(1+x)\,dx$

(B) $\displaystyle\int_{1}^{5}3x\cos x\,dx$

(D) $\displaystyle\int_{0}^{4}3x\cos(1+x)\,dx$

2. Use the given areas to evaluate the following integrals.

a) $\displaystyle\int_{a}^{b}f(x)\ dx$

b) $\displaystyle\int_{b}^{c}f(x)\ dx$

c) $\displaystyle\int_{a}^{c}f(x)\ dx$

d) $\displaystyle\int_{a}^{d}f(x)\ dx$
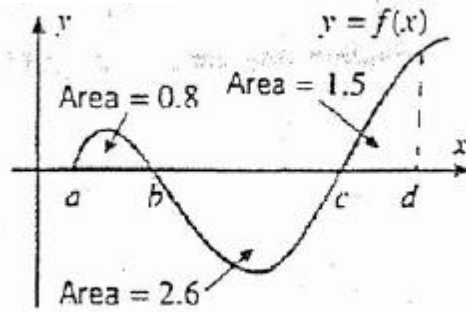
3. f(x) is given to the right. Use area to evaluate the following integrals.

a) $\displaystyle\int_{0}^{2}f(x)\ dx$

b) $\displaystyle\int_{0}^{5}f(x)\ dx$

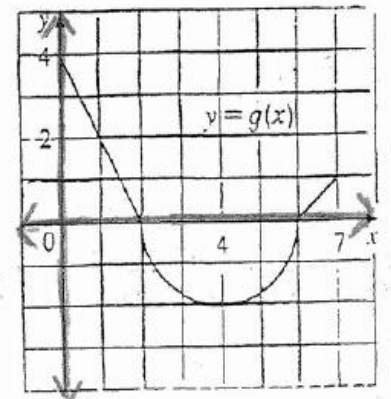c) $\displaystyle\int_{5}^{7}f(x)\ dx$

d) $\displaystyle\int_{0}^{9}f(x)\ dx$
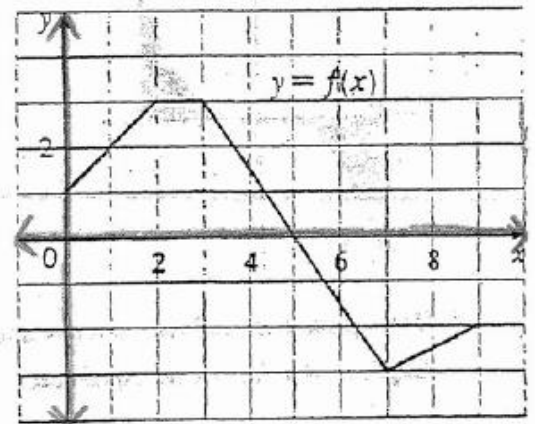
4. The graph of g(x) consists of two straight lines and a semicircle. Use area to evaluate the following integrals.

a) $\displaystyle\int_{0}^{2}g(x)\ dx$

b) $\displaystyle\int_{2}^{6}g(x)\ dx$

c) $\displaystyle\int_{0}^{7}g(x)\ dx$
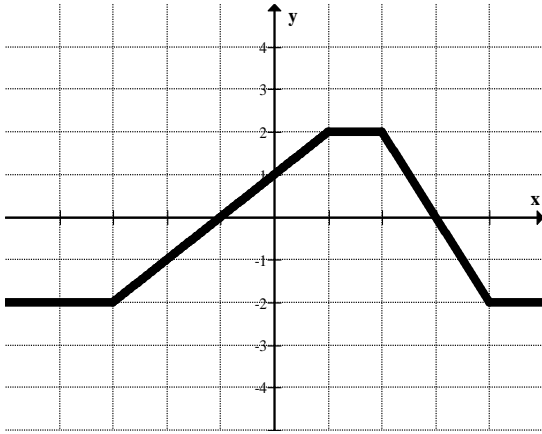
d) $\displaystyle\int_{7}^{0}g(x)\ dx$

Area – AB Calculus   name _____

1.

$$A(t)=\int_{-3}^{t}f(x)dx$$

a) A(-3) =

b) A(-1) =

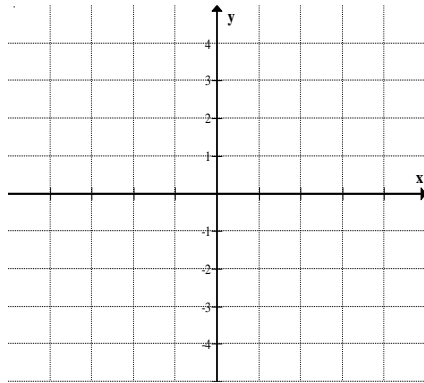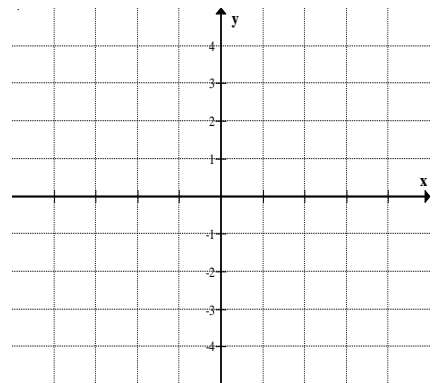c) A(1) =

d) A(5) =

e) A(-5) =

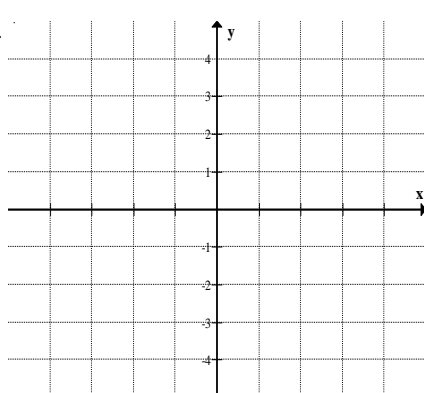2. Evaluate the following integrals by making a graph of the function over the relevant interval. {Use geometry.}
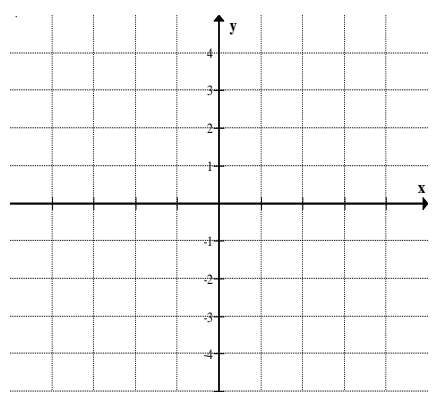
a) $\int_{-3}^{5}3dx$
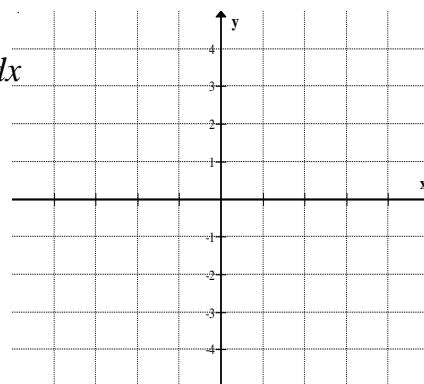

b) $\int_{1}^{4}xdx$

c) $\int_{-2}^{4}(2-x)dx$

d) $\int_{0}^{4}|x-3|dx$

e) $\int_{-4}^{4}\sqrt{16-x^2}dx$

f) $\int_{0}^{3}(3-\sqrt{9-x^2})dx$