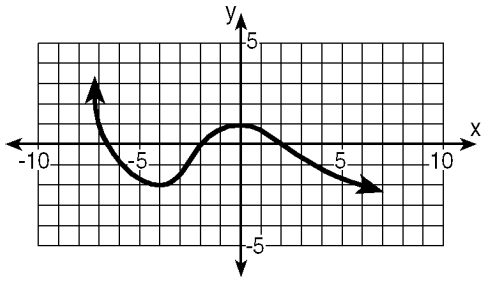
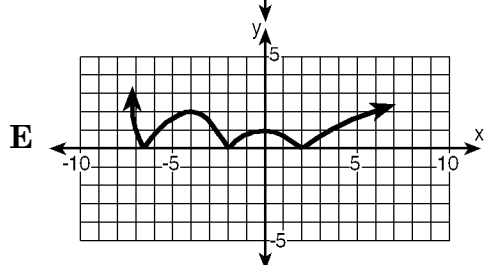
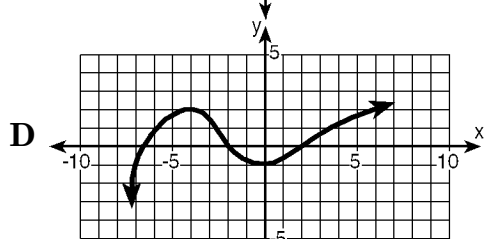
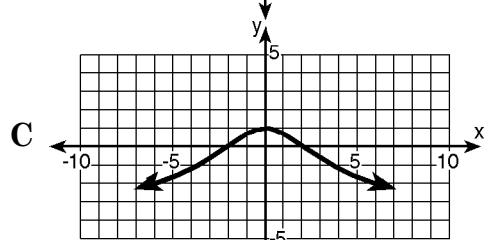
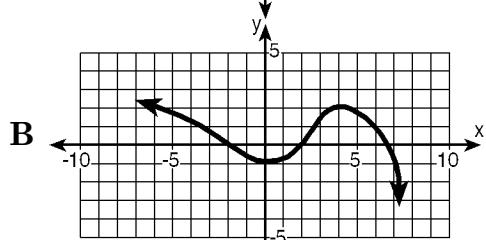
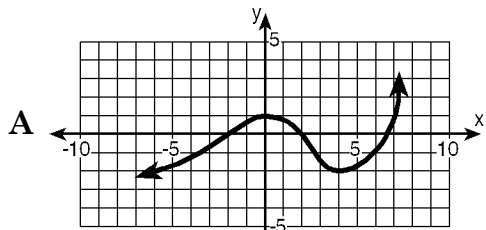


**FROM CHAPTER 1 - FUNCTIONS AND LIMITS**

1) The graph of  $y = h(x)$  is shown below.



Which of the following represents the graph of  $y = |h(x)|$ ?



2) Let function  $f$  be an odd function and decreasing on the closed interval  $[2,5]$ . Which of the following is also decreasing on  $[-5,-2]$ ?

- I.  $-f(x)$
- II.  $f(-x)$
- III.  $-f(-x)$

- A I, only
- B I and III, only
- C I, II, and III
- D III, only
- E II and III, only

3) What is the fundamental period of the function  $y = 3 \sin\left(\frac{x}{3} - \frac{3}{2}\right)$ ?

- A  $6\pi$
- B  $3\pi$
- C 3
- D  $\frac{\pi}{3}$
- E  $\frac{2}{3}\pi$

4) If  $k \neq 0$ , then  $\lim_{x \rightarrow k} \frac{k^2 - x^2}{x^4 - k^4}$  is

- A nonexistent
- B 0
- C  $-\frac{1}{k^2}$
- D  $\frac{1}{2k^2}$
- E  $-\frac{1}{2k^2}$

5) Given the functions  $f(x) = x^2 - 2x + 4$  and

$$g(x) = \begin{cases} \frac{x^3 + 8}{x + 2}, & x \neq -2 \\ k, & x = -2 \end{cases}$$

What is the value of  $k$  that will make function  $f$  equivalent to function  $g$ ?

- A 4
- B 0
- C -12
- D 12
- E -2

## FROM CHAPTER 4 - INTEGRALS

6) The expression  $\frac{1}{100} \left( \frac{100^2}{1} + \frac{100^2}{4} + \frac{100^2}{9} + \dots + \frac{100^2}{100^2} \right)$  is a Riemann sum approximation for

A  $\int_0^1 \frac{1}{x^2} dx$

B  $\frac{1}{100} \int_0^{100} \frac{1}{x^2} dx$

C  $100 \int_0^1 x^2 dx$

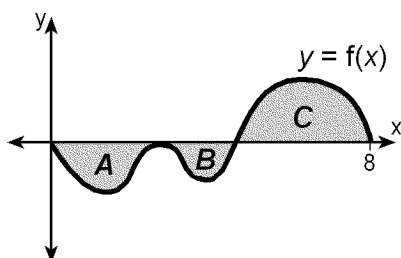
D  $\int_0^1 \frac{100^2}{x^2} dx$

E  $\frac{1}{100} \int_0^1 x^2 dx$

7) Evaluate the given integral.

$$\int t^4 \sqrt[3]{1-3t^5} dt$$

8) In the graph below, the areas of regions A, B, and C are  $A = 3.2$ ,  $B = 1.6$ , and  $C = 4.4$ .



What is the value of  $\int_0^8 (f(x) - 2) dx$ ?

- A 16.4      B -0.4      C -16.4  
D -15.6      E -2.4

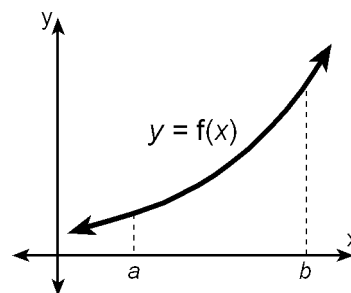
9) For  $k > 0$ , if  $\int_0^k (6kx - k) dx = 2k$ , then  $k =$

- A 1      B  $\frac{2}{3}$       C 2  
D  $\frac{3}{2}$       E  $\frac{1}{2}$

10) The average value of  $f(x) = x^2 \sin^2 x$  on the closed interval  $[-\pi, \pi]$  is

- A 8.765      B 1.395  
C 0.541      D 2.356  
E 3.402

11) According to the graph below, which of the following is false for function  $f$  when the Riemann sums are used to approximate the value of  $\int_a^b f(x) dx$ ?



- A right hand sum  $\geq$  midpoint sum  
B left hand sum  $\geq$  trapezoidal sum  
C midpoint sum  $\leq$  trapezoidal sum  
D left hand sum  $\leq$  right hand sum  
E trapezoidal sum  $\leq$  right hand sum

12) The table of values below represents a continuous function  $f$ .

$x$	$f(x)$
1	20
3	40
4	60
7	50

Using the subintervals  $[1,3]$ ,  $[3,4]$ , and  $[4,7]$ , what is the trapezoidal approximation of  $\int_1^7 f(x) dx$ ?

- A 270      B 135      C 305  
D 290      E 275