

## Practice Exam BC-1

Calculus BC

Section I, Part A

Time — 55 minutes

Number of questions — 28

**No calculator is allowed for these questions.**

$x$	$f(x)$	$f'(x)$
0	1	2
$\frac{1}{2}$	2	4
1	3	5
$\frac{3}{2}$	$\frac{1}{2}$	$-\frac{1}{2}$
2	$\frac{3}{2}$	-2

Questions 1 and 2 refer to the table above.

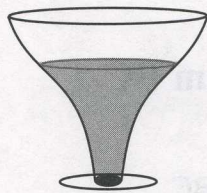
1. If  $f$  is a differentiable function on the interval  $0 < x < 2$ , find the derivative of the inverse function  $f^{-1}(x)$  at  $x = \frac{1}{2}$ .

(A) -4      (B) -2      (C) -1      (D)  $-\frac{1}{8}$       (E)  $-\frac{1}{16}$

2. Using the table above and the fact that  $f'(x)$  is continuous on the interval

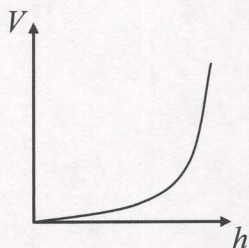
$$0 \leq x \leq 2, \int_0^2 f'(x) dx =$$

(A) -4      (B) -2      (C) 0      (D)  $\frac{1}{2}$       (E)  $\frac{3}{2}$

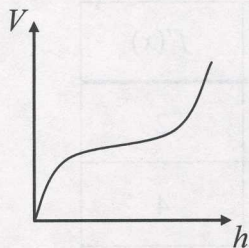


3. The glass above is initially empty, then gradually filled with water. Which of the following graphs best represents the volume  $V$  of water versus the height  $h$  of the water?

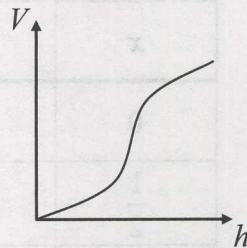
(A)



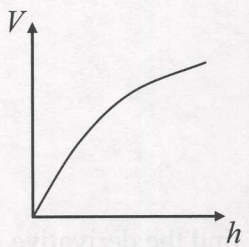
(B)



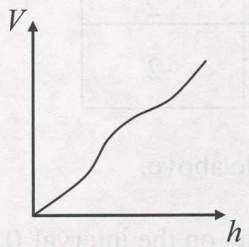
(C)



(D)



(E)



4. If  $f(x) = \sum_{n=0}^{\infty} \frac{(2x+1)^{n+1}}{n!}$ , then  $f''\left(-\frac{1}{2}\right) =$

(A) 0

(B) 1

(C) 2

(D) 4

(E) 8

5. If  $f(x)$  is a continuous and even function and  $\int_0^4 f(x) dx = -5$  and  $\int_4^6 f(t) dt = 2$ , then the average value of  $f(x)$  over the interval from  $x = -6$  to  $x = 4$  is

(A) -0.2

(B) -0.8

(C) 0.2

(D) 1.2

(E) 2

