

Chapter 5 P2 Multiple Choice Practice Worksheet

25. The function $f(x) = x^4 - 4x^2$ has

- (A) one relative minimum and two relative maxima
- (B) one relative minimum and one relative maximum
- (C) two relative maxima and no relative minimum
- (D) two relative minima and no relative maximum
- (E) two relative minima and one relative maximum**

$$f'(x) = 4x^3 - 8x$$

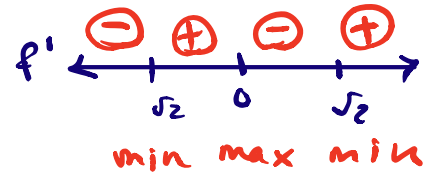
$$f''(x) = 12x^2 - 8$$

$$0 = 4x^3 - 8x$$

$$4x(x^2 - 2) = 0$$

$$x = 0$$

$$x = \pm\sqrt{2}$$



26. The number of inflection points of the curve in Question 25 is

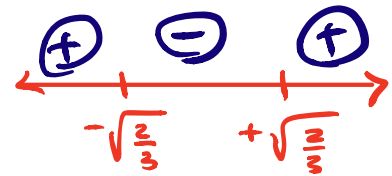
- (A) 0
- (B) 1
- (C) 2**
- (D) 3
- (E) 4

$$0 = 12x^2 - 8$$

$$0 = 4(3x^2 - 2)$$

$$0 = 3x^2 - 2$$

$$x = \pm\sqrt{\frac{2}{3}}$$



For Questions 42 and 43, $f'(x) = x \sin x - \cos x$ for $0 < x < 4$. (Calculator)

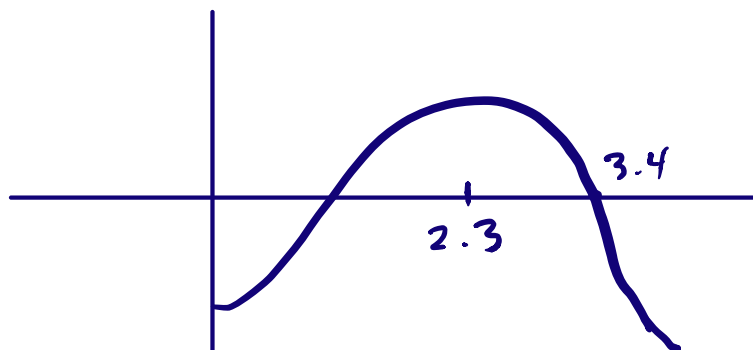
42. f has a local maximum when x is approximately

- (A) 0.9
- (B) 1.2
- (C) 2.3
- (D) 3.4**
- (E) 3.7

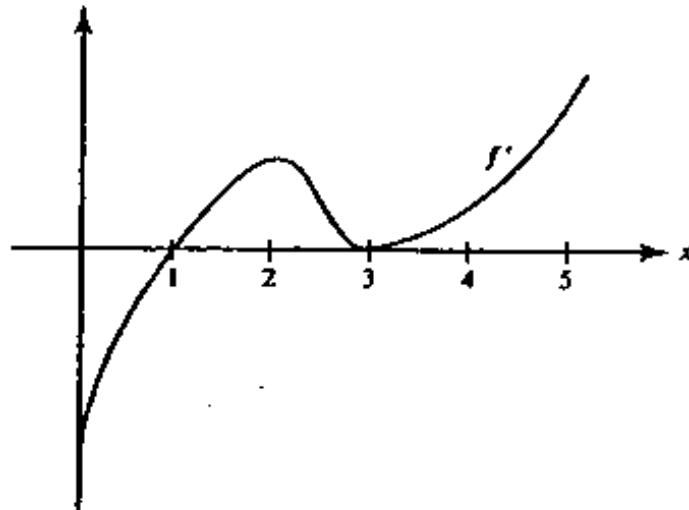
$f'(x)$ goes from + to -

43. f has a point of inflection when x is approximately

- (A) 0.9
- (B) 1.2
- (C) 2.3**
- (D) 3.4
- (E) 3.7



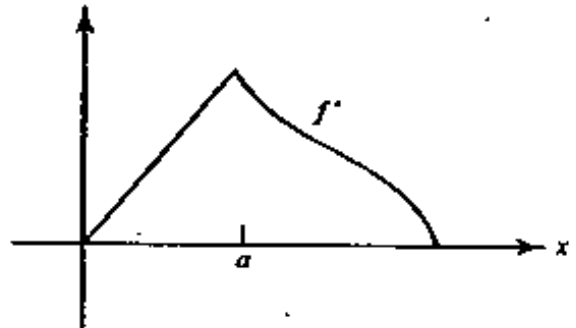
Use the graph of f' on $[0,5]$, shown below, for Questions 56 and 57.



- B** 56. f has a local minimum at $x =$
 (A) 0 **(B)** 1 (C) 2 (D) 3 (E) 5
- D** 57. f has a point of inflection at $x =$
 (A) 1 only (B) 2 only (C) 3 only
(D) 2 and 3 only (E) none of these

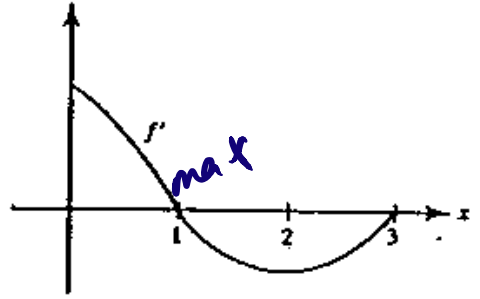
D 58. It follows from the graph of f' , shown at the right, that

- (A) f is not continuous at $x = a$ \times
 (B) f is continuous but not differentiable at $x = a$
 (C) f has a relative maximum at $x = a$ \times
(D) f has a point of inflection at $x = a$
 (E) none of these

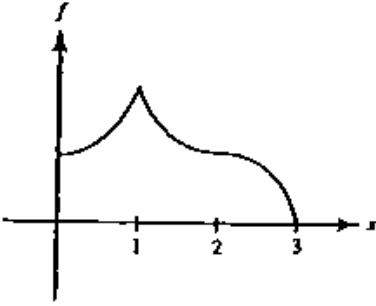


C

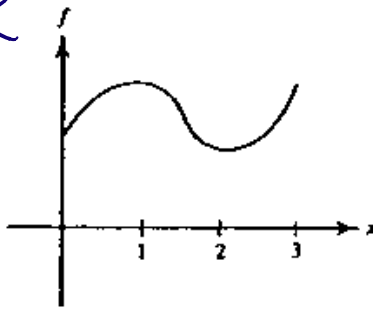
75. Given f' as graphed, which could be the graph of f ?



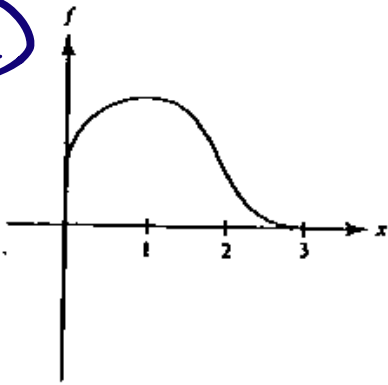
(A)



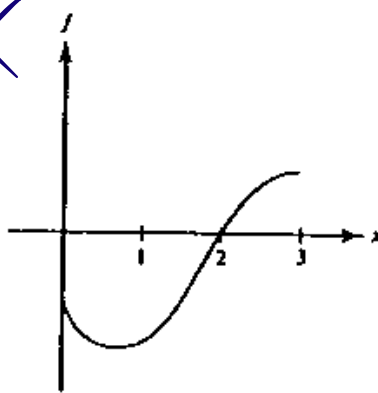
~~(B)~~



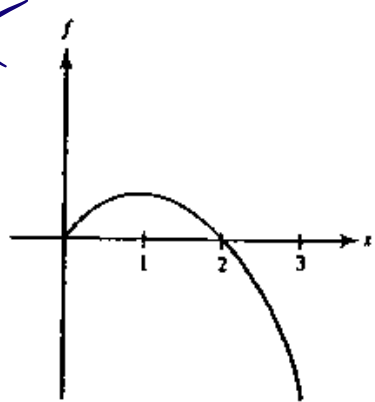
(C)



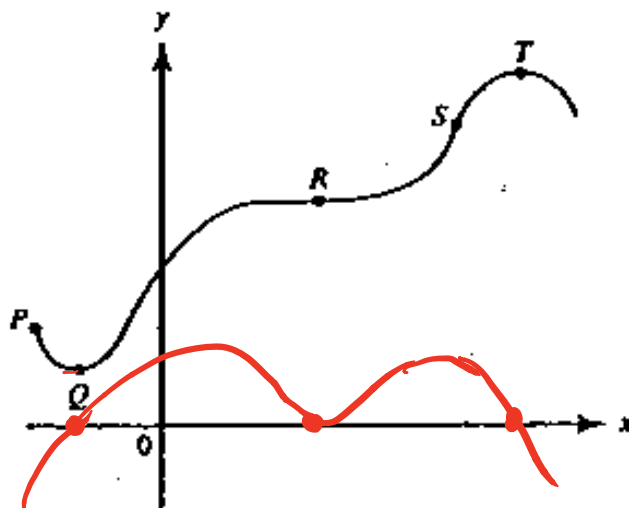
~~(D)~~



~~(E)~~



Use the following graph for Questions 82–84.



82. At which labeled point do both $\frac{dy}{dx}$ and $\frac{d^2y}{dx^2}$ equal zero?
- (A) P (B) Q (C) R (D) S (E) T

83. At which labeled point is $\frac{dy}{dx}$ positive and $\frac{d^2y}{dx^2}$ equal to zero?
- (A) P (B) Q (C) R (D) S (E) T

84. At which labeled point is $\frac{dy}{dx}$ equal to zero and $\frac{d^2y}{dx^2}$ negative?
- (A) P (B) Q (C) R (D) S (E) T

$f' \oplus \rightarrow \ominus$

25.	E		
26.	C		
Answers			
35.	B	72.	B
36.	D	73.	B
37.	A	74.	D
38.	E		
39.	B	75.	C
40.	D	92.	E
41.	A		
42.	D	82.	C
43.	C	83.	D
56.	B	84.	E
57.	D		
58.	D		
67.	C		
68.	E		
69.	C		