CALCULUS 11: QUIZ SOLUTIONS

Question 1

If $f(x)=2x^3+3x^2+-12x-9$, what is $f''(x)$?

A. $3x^2-12x-9$ B. $-12x-9$ C. $12x+6$ D. $6x^2+6x-12$

Solution

$$f(x)=2x^3+3x^2-12x-9$$
$$\therefore f'(x)=6x^2+6x-12$$
$$\therefore f''(x)=12x+6$$

So, the correct answer is AC

Question 2

If $f(x)=\frac{1}{x^2}$, what is $f''(x)$?

A. $-\frac{2}{x}$ B. $\frac{2}{x^2}$ C. $-\frac{6}{x^3}$ D. $\frac{6}{x^4}$

Solution

$$f(x)=\frac{1}{x^2}=x^{-2}$$
$$\therefore f'(x)=-2x^{-3}$$
$$\therefore f''(x)=6x^{-4}=\frac{6}{x^4}$$

So, the correct answer is D.

Question 3

If $g(x)=5-6x-x^2$, what is its second derivative?

A. -2 B. $-6-6x$ C. $6+2x$ D. 2

Solution

$$g(x)=5-6x-x^2$$
$$\therefore g'(x)=-6-2x$$
$$\therefore g''(x)=-2$$

So, the correct answer is A.

Question 4

If $f'(x) = x^2 + x - 2$, what is $f''(x)$?

A. -2 B. $2x - 1$ C. $2x + 1$ D. 2

Solution

$$f'(x) = x^2 + x - 2$$
$$\therefore f''(x) = 2x + 1$$

So, the correct answer is C.

Question 5

If $f(x) = x^3 - 4x^2 + 4x$, what is the value of $f''(2)$?

A. 0 B. 2 C. 4 D. 8

Solution

$$f(x) = x^3 - 4x^2 + 4x$$
$$\therefore f'(x) = 3x^2 - 8x + 4$$
$$\therefore f''(x) = 6x - 8$$
$$\therefore f''(2) = 6(2) - 8 = 4$$

So, the correct answer is C.