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I.D.#

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Section	SIX	SEVEN
Check		

Q.1. 241SHE5. (Marks: 15). Consider the graph of the function

$$f(x) = x + \cos x,$$

on the interval $[0, 2\pi]$. Find the greatest intervals of concavity:

Q.2. 174VP7. (Marks: 10). Let

$$f(x) = \frac{x}{1+x^2}.$$

Find the greatest intervals where the function is increasing and decreasing.

(a) The interval(s) on which the function f is Decreasing:

(a) The graph of the function is Concave Up in the open interval(s) given by:

(b) The graph of the function is Concave Down in the open interval(s) given by:

(b) The interval(s) on which the function f is Increasing:

(c) Find all the inflection point(s) (x, y) :

Q.3. (183VP17). (Marks:15). Find the critical points (if any) and the maximum and minimum values of

$F(x) = 6\sqrt{x} - 3x$ on the closed interval $[0, 9]$.

(a) The critical point(s) is (are):

(b) F is maximum at $x =$ _____

The maximum value of F is equal to:

(c) F is maximum at $x =$ _____

The maximum value of F is equal to: _

Q.4. 266TB4. (Marks: 10) Find the differential dy and calculate dy for the given values of x and dx .

$$y = f(x) = x^3 + x^2 - 2x + \frac{1}{x},$$

$$x = 1 \text{ and } dx = 0.1.$$

The differential dy :

$$dy = \underline{\hspace{2cm}}$$

Calculations:

$$dy = \underline{\hspace{2cm}}$$

Q.5. (Marks:10). 314TB48. Find the limit:

$$\lim_{x \rightarrow 1} \left[\frac{1}{\ln x} - \frac{1}{x-1} \right].$$

Answer: _____
