

Marks: 42[illegible]

Question No: 1 (Marks: 1) - Please choose one

If f is a twice differentiable function at a stationary point and then f has relative
At

- ▶ Minima
- ▶ **Maxima**
- ▶ None of these

Note:Maxima(If Maxima refers to local maximum)

Question No: 2 (Marks: 1) - Please choose one

A line is called ----- for the graph of a function if as approaches from the right or from the left

- ▶ Horizontal asymptotes
- ▶ None of these
- ▶ **Vertical asymptotes**

Question No: 3 (Marks: 1) - Please choose one

A line is called a for the graph f if

- ▶ Vertical asymptotes
- ▶ Horizontal asymptotes
- ▶ **None of these**

Question No: 4 (Marks: 1) - Please choose one

According to Power-Rule of differentiation, if where is a real number, then

- ▶
- ▶
- ▶
- ▶

Question No: 5 (Marks: 1) - Please choose one

If then

- ▶ 1
- ▶ **-1**
- ▶
- ▶

Question No: 6 (Marks: 1) - Please choose one

If then

▶ 0

▶

▶



Question No: 7 (Marks: 1) - Please choose one

If then

▶ 2

▶ -2

▶ 0

▶ -3

Question No: 8 (Marks: 1) - Please choose one

▶

▶

▶



Question No: 9 (Marks: 1) - Please choose one

$30^0 =$ _____

▶

▶



▶

Question No: 10 (Marks: 1) - Please choose one

Consider a function and a constant then

▶ 0

▶

▶



Question No: 11 (Marks: 1) - Please choose one



Question No: 12 (Marks: 1) - Please choose one

Chain rule is a rule for differentiating _____ of functions.

▶ **Product**

▶ Sum

▶ Difference

▶ Composition

Question No: 13 (Marks: 1) - Please choose one

The power rule, holds if n is _____

▶ **An integer**

▶ A rational number

▶ An irrational number

▶ All of the above

Question No: 14 (Marks: 1) - Please choose one

Let a function be defined on an interval, and let and denote points in that interval. If whenever then which of the following statement is correct?

▶ **is an increasing function.**

▶ is a decreasing function.

▶ is a constant function.

Question No: 15 (Marks: 1) - Please choose one

If on an open interval (a,b) , then which of the following statement is correct?

▶ **is concave up on (a, b) .**

▶ is concave down on (a, b) .

▶ is linear on (a, b) .

Question No: 16 (Marks: 1) - Please choose one

If on an open interval (a,b) then which of the following statement is correct?

▶ is concave up on (a, b) .

▶ **is concave down on (a, b)**

▶ is linear on (a, b) .

Question No: 17 (Marks: 1) - Please choose one

- ▶ 1
- ▶
- ▶
- ▶

Question No: 18 (Marks: 1) - Please choose one

- ▶ 0
- ▶
- ▶
- ▶

Question No: 19 (Marks: 1) - Please choose one

Let $f(x) = x^3 - 3x^2 + 2x$. Which of the following is correct?

- ▶
- ▶
- ▶
- ▶

Question No: 20 (Marks: 1) - Please choose one

What is the base of natural logarithm?

- ▶ 2.71
- ▶ 10
- ▶ 5
- ▶ Any real number

Question No: 21 (Marks: 1) - Please choose one

Let $f(x)$ be critical points of the function $f(x)$. Those critical points for which $f'(x) = 0$ are called _____ of $f(x)$.

- ▶ Local points
- ▶ End points
- ▶ Stationary points

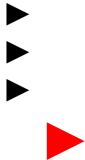
Question No: 22 (Marks: 1) - Please choose one



Question No: 23 (Marks: 1) - Please choose one



Question No: 24 (Marks: 1) - Please choose one



Question No: 25 (Marks: 3)

If $f(x) = x^4 - 8x^2$, determine all relative extrema for the function. Using First Derivative Test.

Solution:

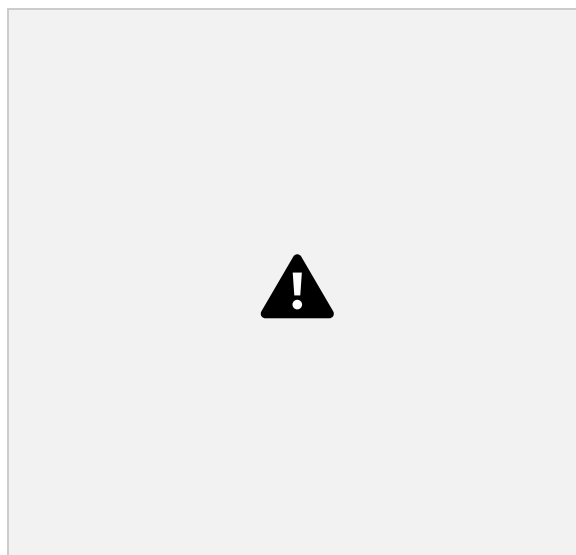
Question No: 26 (Marks: 5)

Differentiate

Solution:

Question No: 27 (Marks: 10)

Determine the intervals in which the graph of the function is concave upward or downward.



Solution:

X	1	2	3	4
F(x)	-1	-0.25	-0.11	-0.625

Conclusion: