MATHEMATICS 3208 · NEWFOUNDLAND AND LABRADOR

Mathematics 3208
Practice Test

Unit C: Applications of Derivatives

25 Questions

Original practice test based on the Newfoundland and Labrador curriculum. Work through each question, then check your answers at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

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Question 1

If $f(x) = 2x^2 + 1$, then the x coordinate of the critical point is

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Question 2

If $f(x) = 3x^2 + 2$, then the x coordinate of the critical point is

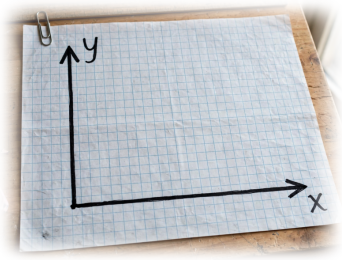
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Question 3

If $f(x) = 1x^2 + 4$, then the x coordinate of the critical point is

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Question 4

The function $f(x) = 1(x - 3)^2 + 2$ has a local

A) minimum

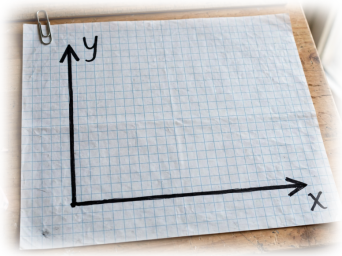
B) maximum

C) inflection point

D) asymptote

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Question 5

The function $f(x) = -1(x - 2)^2 + 5$ has a local

A) minimum

B) maximum

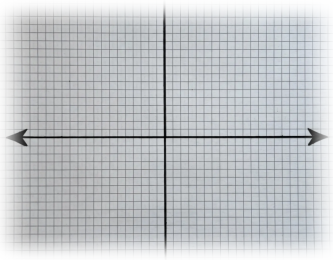
C) inflection point

D) asymptote

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Question 6

The function $f(x) = 2(x + 1)^2 + 4$ has a local

A) maximum

B) inflection point

C) minimum

D) asymptote

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Question 7

A rectangular field is fenced on three sides with 100 metres of fencing, the fourth side being a river. The maximum area is, in square metres

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Question 8

A rectangular field is fenced on three sides with 60 metres of fencing, the fourth side being a river. The maximum area is, in square metres

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Question 9

A rectangular field is fenced on three sides with 80 metres of fencing, the fourth side being a river. The maximum area is, in square metres

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Question 10

If $s(t) = 20t - 5t^2$, then the velocity at time 2 is

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Question 11

If $s(t) = 30t - 5t^2$, then the velocity at time 1 is

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Question 12

If $s(t) = 10t - 5t^2$, then the velocity at time 3 is

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Question 13

If $s(t) = 20t - 5t^2$, then the acceleration at time 2 is

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Question 14

If $s(t) = 30t - 5t^2$, then the acceleration at time 3 is

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Question 15

A circle has radius 5 units increasing at 2 units per second. The rate of change of its area is, in square units per second, to two decimal places

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Question 16

A circle has radius 3 units increasing at 4 units per second. The rate of change of its area is, in square units per second, to two decimal places

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Question 17

A circle has radius 10 units increasing at 1 units per second. The rate of change of its area is, in square units per second, to two decimal places

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Question 18

A cube has side length 4 units increasing at 2 units per second. The rate of change of its volume is, in cubic units per second

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Question 19

A cube has side length 3 units increasing at 1 units per second. The rate of change of its volume is, in cubic units per second

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Question 20

If $C(x) = 100 + 2x$, then the marginal cost is

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Question 21

If $C(x) = 50 + 1x$, then the marginal cost is

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Question 22

If $f'(x) > 0$ on an interval, then f is on that interval

A) increasing

B) decreasing

C) constant

D) concave down

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Question 23

If $f'(x) < 0$ on an interval, then f is on that interval

A) increasing

B) decreasing

C) constant

D) concave up

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Question 24

If $f''(x) > 0$ on an interval, then f is on that interval

A) concave down

B) decreasing

C) concave up

D) constant

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Question 25

If $f(x) = x^3 - 3x$, then $f'(1)$ is

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ANSWER KEY

1.	0	**10.**	0	**18.**	96
2.	0	**11.**	20	**19.**	27
3.	0	**12.**	-20	**20.**	2
4.	A	**13.**	-10	**21.**	1
5.	B	**14.**	-10	**22.**	A
6.	C	**15.**	62.8	**23.**	B
7.	1250	**16.**	75.36	**24.**	C
8.	450	**17.**	62.8	**25.**	0
9.	800				

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