NOVA SCOTIA CALCULUS 12 · FINAL EXAM · 50 QUESTIONS

Final Exam — Practice Test

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.

1 **Find the limit as x approaches 4 of $x^2 + 1x$, giving a whole number .**

ANSWER _____

Understand It with Pulse | Flag a mistake

2 **Find the derivative at x = 2 of $1x^4$.**

ANSWER _____

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3 **Find the derivative at x = 0 of 1sin of 4x .**

ANSWER _____

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4 **A position function is s of $t = 1t^2 + 4t$. Find the velocity at t = 2 .**

ANSWER _____

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5 **An antiderivative F of $1x^3$ has F of 0 = 0 . Find F of 2 .**

ANSWER _____

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6 **Find the limit as x approaches 6 of $x^2 + 1x$, giving a whole number .**

ANSWER _____

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7 **Find the derivative at x = 2 of $7x^2$.**

ANSWER _____

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8 **Find the derivative at x = 0 of 3sin of 3x .**

ANSWER _____

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9 **A position function is s of t = $3t^2 + 1t$. Find the velocity at t = 2 .**

ANSWER _____

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10 **An antiderivative F of $3x^2$ has F of 0 = 0 . Find F of 2 .**

ANSWER _____

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11 **Find the limit as x approaches 2 of $x^2 + 5x$, giving a whole number .**

ANSWER _____

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12 **Find the derivative at x = 2 of $1x^6$.**

ANSWER _____

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13 **Find the derivative at x = 0 of 3sin of 1x .**

ANSWER _____

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14 **A position function is s of t = 2t² + 5t . Find the velocity at t = 2 .**

ANSWER _____

Understand It with Pulse | Flag a mistake

15 **An antiderivative F of 3x³ has F of 0 = 0 . Find F of 2 .**

ANSWER _____

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16 **The limit as x approaches 2 of $x^2 + 1$ is best found by**

A graphing only

B long division

C direct substitution

D guessing

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17 **The power rule applies directly to**

A a sine function

B a logarithm

C an exponential with base e only

D a power of x

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18 **The derivative of ln x is**

- **A** x
- **B** $\ln x$
- **C** e^x
- **D** $\frac{1}{x}$

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19 **A critical point of a function occurs where the derivative is**

- **A** zero or undefined
- **B** always zero
- **C** always positive
- **D** equal to the function

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20 **An antiderivative of 2x is**

- **A** $x^2 + C$
- **B** $2x^2 + C$
- **C** $x + C$
- **D** $2 + C$

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21 **A function has a removable discontinuity at a point where**

- **A** the function is smooth
- **B** the slope is zero
- **C** the value is infinite
- **D** a hole can be filled by one value

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22 The derivative of $3x^2$ is

- A 3x
- B 9x
- C 6x
- D x^2

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23 The derivative of sin 3x is

- A cos 3x
- B 3 sin 3x
- C -3 cos 3x
- D 3 cos 3x

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24 **A function is decreasing where its derivative is**

A negative

B positive

C zero

D constant

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25 **An antiderivative of cos x is**

A sin x plus C

B -sin x plus C

C cos x plus C

D tan x plus C

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26

A vertical asymptote can make a limit

A always zero

B always one

C infinite or undefined

D a whole number

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27

The product rule for f × g gives

A f' × g'

B f + g

C f' + g'

D f' × g + f × g'

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28 **The derivative of 2^x is**

- A $2^x \times \ln 2$
- B $x \times 2^x$
- C $2^x / \ln 2$
- D $\ln 2$

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29 **Optimisation problems ask for a quantity that is**

- A as large or as small as possible
- B always zero
- C always increasing
- D a straight line

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30 **An antiderivative of 3 is**

- **A** $3x + C$
- **B** $3x^2 + C$
- **C** $x^3 + C$
- **D** 0

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31 **Find the limit as x approaches 6 of $x^2 + 3x$, giving a whole number .**

ANSWER _____

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32 **Find the derivative at x = 2 of $3x^3$.**

ANSWER _____

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33 **Find the derivative at x = 0 of 3sin of 4x .**

ANSWER

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34 **A position function is s of t = $4t^2 + 3t$. Find the velocity at t = 2 .**

ANSWER

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35 **An antiderivative F of $3x^4$ has F of 0 = 0 . Find F of 2 .**

ANSWER

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36 **Find the limit as x approaches 7 of $x^2 + 3x$, giving a whole number .**

ANSWER

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37 **Find the derivative at x = 2 of $1x^2$.**

ANSWER

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38 **Find the derivative at x = 0 of 4sin of 4x .**

ANSWER

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39 **A position function is s of $t = 2t^2 + 6t$. Find the velocity at t = 1 .**

ANSWER

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40 **An antiderivative F of $3x^5$ has F of 0 = 0 . Find F of 2 .**

ANSWER

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41 **A jump discontinuity has**

- **A** equal left and right limits
- **B** no graph
- **C** different left and right limits
- **D** a hole only

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42 **The derivative of the square root of x is**

- **A** 2 times the square root of x
- **B** the $\frac{\sqrt{x}}{2}$
- **C** $\frac{1}{2}$ times the square root of x
- **D** $-\sqrt{x}$

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43 **The derivative of $e^{-}x$ is**

- **A** $e^{-}x$
- **B** negative $e^{-}x$
- **C** x $e^{-}x$
- **D** 0

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44 **A tangent line at a point has slope equal to**

- **A** the function value there
- **B** the derivative at that point
- **C** zero
- **D** the second derivative there

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45 **An antiderivative of $\sec^2 x$ is**

- **A** $\sec x + C$
- **B** $\tan x + C$
- **C** $\cos x + C$
- **D** $\sin x + C$

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46 **A function is continuous at a point if its graph has**

- **A** a corner at that point
- **B** a vertical asymptote
- **C** no break at that point
- **D** a horizontal asymptote

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47 The derivative of x is

- A 0
- B 1
- C x
- D 2

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48 The derivative of $\ln(x^2)$, for x greater than 0, is

- A $\frac{1}{x}$
- B $\frac{2}{x}$
- C 2x
- D x

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49 **Concave down means the second derivative is**

- A positive
- B negative
- C zero
- D undefined

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50 **An antiderivative of $2e^x$ is**

- A $e^{2x} + C$
- B $2e^x + C$
- C $2x e^x + C$
- D $e^x + C$

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ANSWER KEY

1.	20	**18.**	D	**35.**	19.2
2.	32	**19.**	A	**36.**	70
3.	4	**20.**	A	**37.**	4
4.	8	**21.**	D	**38.**	16
5.	4	**22.**	C	**39.**	10
6.	42	**23.**	D	**40.**	32
7.	28	**24.**	A	**41.**	C
8.	9	**25.**	A	**42.**	C
9.	13	**26.**	C	**43.**	B
10.	8	**27.**	D	**44.**	B
11.	14	**28.**	A	**45.**	B
12.	192	**29.**	A	**46.**	C
13.	3	**30.**	A	**47.**	B
14.	13	**31.**	54	**48.**	B
15.	12	**32.**	36	**49.**	B
16.	C	**33.**	12	**50.**	B
17.	D	**34.**	19		

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