ONTARIO CALCULUS AND VECTORS, GRADE 12, UNIVERSITY PREPARATION (MCV4U) · UNIT B · 25 QUESTIONS

Derivatives and Their Applications — 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 **The derivative of $f(x) = x^3$ at x equal to 2 is**

- A 13
- B 11
- C 6
- D 12

Understand It with Pulse | Flag a mistake

2 **The derivative of $f(x) = x^4$ at x equal to 1 is**

A 5

B 3

C 15

D 4

Understand It with Pulse | Flag a mistake

3 **The derivative of $f(x) = x^5$ at x equal to 2 is**

A 81

B 80

C 79

D 10

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4 **The derivative of $f(x) = x^4$ at $x = 2$ is**

ANSWER _____

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5 **The derivative of $f(x) = 2x^2 + 3x$ is**

A $f'(x) = 4x + 3x$

B $f'(x) = 2x$

C $f'(x) = 2x^2 + 3$

D $f'(x) = 4x + 3$

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6 **The derivative of $f(x) = 3x^2 + 3x$ is**

A $f'(x) = 6x + 3$

B $f'(x) = 6x + 3x$

C $f'(x) = 3x$

D $f'(x) = 3x^2 + 3$

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7 **The derivative of $f(x) = 4x^2 + 3x$ is**

A $f'(x) = 8x + 3x$

B $f'(x) = 8x + 3$

C $f'(x) = 4x$

D $f'(x) = 4x^2 + 3$

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8 **Differentiating $f(x) = x^3 + x$ gives**

- **A** $3x^2 + 1$
- **B** $3x^2$
- **C** $x^2 + 1$
- **D** $3x + 1$

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9 **The derivative of $f(x) = (x + 2)^2$ is**

- **A** $f'(x) = 2x + 2$
- **B** $f'(x) = 2x + 4$
- **C** $f'(x) = x + 2$
- **D** $f'(x) = 2x$

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10 **The derivative of $f(x) = (x + 3)^2$ is**

- **A** $f'(x) = 2x + 3$
- **B** $f'(x) = x + 3$
- **C** $f'(x) = 2x + 6$
- **D** $f'(x) = 2x$

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11 **The derivative of $f(x) = (x + 4)^2$ is**

- **A** $f'(x) = 2x + 4$
- **B** $f'(x) = x + 4$
- **C** $f'(x) = 2x$
- **D** $f'(x) = 2x + 8$

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12 **The slope of the line f(x) = 5x is**

ANSWER _____

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13 **The derivative of f(x) = sin 2x is**

A f'(x) = cos 2x

B f'(x) = -2 sin 2x

C f'(x) = 2 sin 2x

D f'(x) = 2 cos 2x

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14 **The derivative of f(x) = sin 3x is**

A f'(x) = 3 cos 3x

B f'(x) = cos 3x

C f'(x) = -3 sin 3x

D f'(x) = 3 sin 3x

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15 **The derivative of f(x) = sin 4x is**

A f'(x) = cos 4x

B f'(x) = 4 cos 4x

C f'(x) = -4 sin 4x

D f'(x) = 4 sin 4x

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16 **Differentiating f(x) = 2 sin x gives**

A 2 cos x

B -2 cos x

C 2 sin x

D cos x

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17 **The derivative of f(x) = cos 2x is**

A f'(x) = 2 sin 2x

B f'(x) = -sin 2x

C f'(x) = -2 sin 2x

D f'(x) = 2 cos 2x

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18 **The derivative of f(x) = cos 3x is**

- **A** f'(x) = 3 sin 3x
- **B** f'(x) = -sin 3x
- **C** f'(x) = 3 cos 3x
- **D** f'(x) = -3 sin 3x

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19 **The derivative of f(x) = cos 4x is**

- **A** f'(x) = -4 sin 4x
- **B** f'(x) = 4 sin 4x
- **C** f'(x) = -sin 4x
- **D** f'(x) = 4 cos 4x

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20 **Differentiating f(x) = 3 cos x gives**

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

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21 **The derivative of $f(x) = e^{2x}$ is**

- A $f'(x) = 2e^{2x}$
- B $f'(x) = e^{2x}$
- C $f'(x) = 2e^{x}$
- D $f'(x) = 2xe^{2x}$

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22 **The derivative of $f(x) = e^{3x}$ is**

- **A** $f'(x) = e^{3x}$
- **B** $f'(x) = 3e^{3x}$
- **C** $f'(x) = 3e^{x}$
- **D** $f'(x) = 3xe^{3x}$

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23 **The derivative of $f(x) = e^{4x}$ is**

- **A** $f'(x) = e^{4x}$
- **B** $f'(x) = 4e^{x}$
- **C** $f'(x) = 4e^{4x}$
- **D** $f'(x) = 4xe^{4x}$

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24 **By the chain rule, the derivative of $e^{(2x)}$ is**

- **A** $2e^{(2x)}$
- **B** $e^{(2x)}$
- **C** e^{x}
- **D** $2x\, e^{(2x)}$

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25 **The derivative of f(x) = ln 2x is**

- **A** $f'(x) = \frac{2}{x}$
- **B** $f'(x) = \frac{1}{2x}$
- **C** $f'(x) = x$
- **D** $f'(x) = \frac{1}{x}$

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ANSWER KEY

1. D
2. D
3. B
4. 32
5. D
6. A
7. B
8. A
9. B
10. C
11. D
12. 5
13. D
14. A
15. B
16. A
17. C
18. D
19. A
20. A
21. A
22. B
23. C
24. A
25. D

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