RATES OF CHANGE AND INCREASING AND DECREASING FUNCTIONS - PRACTICE TEST | NEW BRUNSWICK CALCULUS 120 · UNIT B · 25 QUESTIONS

Rates of Change and Increasing and Decreasing Functions — 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 **For $f(x) = 2x^2 + 3$, the average rate of change from $x = 0$ to $x = 2$ is**

ANSWER _____

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2 **For $f(x) = 3x^2 + 1$, the average rate of change from $x = 0$ to $x = 2$ is**

ANSWER _____

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3 **For $f(x) = 4x^2 + 2$, the average rate of change from $x = 0$ to $x = 2$ is**

ANSWER _____

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4 **A car travels 120 kilometres in 2 hours. Its average rate of change of distance is, in kilometres per hour,**

ANSWER _____

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5 **The secant slope of $f(x) = x^2$ between $x = 1$ and $x = 3$ is**

ANSWER _____

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6 **The average rate of change of $f(x) = 2x + 1$ between any two points is**

ANSWER _____

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7 **For $f(x) = 2x^2 + 3$, the instantaneous rate of change at $x = 1$ is**

ANSWER _____

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8 **For $f(x) = 3x^2 + 1$, the instantaneous rate of change at $x = 1$ is**

ANSWER

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9 **For $f(x) = 4x^2 + 2$, the instantaneous rate of change at $x = 1$ is**

ANSWER

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10 **The instantaneous rate of change of $f(x) = x^2$ at $x = 3$ is**

ANSWER

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11 **A particle has position $s(t) = t^2$. Its instantaneous velocity at $t = 4$, in metres per second, is**

ANSWER

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12 **The derivative is the instantaneous rate of change. For $f(x) = 3x^2$, the instantaneous rate of change at x = 1 is**

ANSWER _____

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13 **For $f(x) = x^2 - 2x$, the critical point is at x =**

ANSWER _____

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14 **For $f(x) = x^2 - 3x$, the critical point is at x =**

ANSWER _____

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15 **For $f(x) = x^2 - 4x$, the critical point is at x =**

ANSWER _____

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16 **The function f(x) = x² - 4x has a critical point at x =**

ANSWER _____

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17 **A critical point of a function is a point where the derivative is**

A zero or undefined

B always 1

C always positive

D equal to the function value

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18 The critical points of $f(x) = x^3 - 3x$ are at $x =$

- **A** 1 and -1
- **B** 0 only
- **C** 3 only
- **D** 1 only

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19 For $f(x) = x^2 - 4x$, the derivative at $x = 3$ is

ANSWER _____

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20 For $f(x) = x^2 - 6x$, the derivative at $x = 4$ is

ANSWER _____

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21 **For $f(x) = x^2 - 8x$, the derivative at $x = 5$ is**

ANSWER _____

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22 **The derivative of $f(x) = x^2 + 5x$ at $x = 2$ equals**

ANSWER _____

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23 **If $f'(x) = 4x$, then $f'(3)$ is**

ANSWER _____

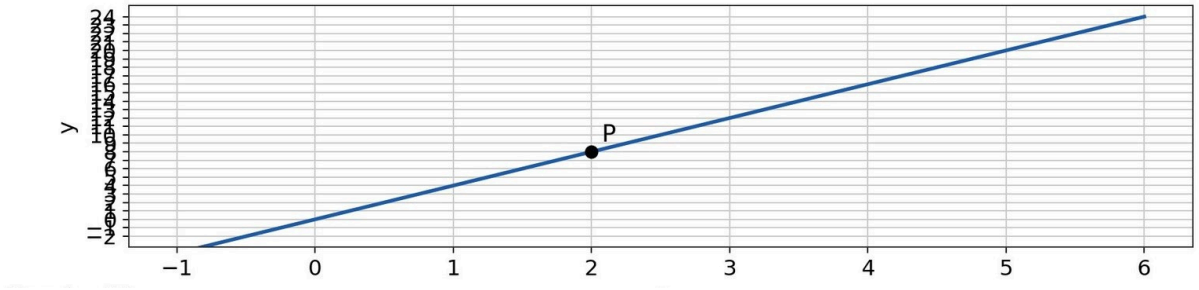
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24 **The slope of the tangent to $f(x) = \sqrt{x}$ at $x = 4$ is**

ANSWER _____

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25 **For points (0,0) and (2,8) on a graph, the average rate of change is**



ANSWER

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ANSWER KEY

1. 4
2. 6
3. 8
4. 60
5. 4
6. 2
7. 4
8. 6
9. 8
10. 6
11. 8
12. 6
13. 1
14. 1.5
15. 2
16. 2
17. A
18. A
19. 2
20. 2
21. 2
22. 9
23. 12
24. 0.25
25. 4

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