MAXIMUM AND MINIMUM VALUES AND OPTIMIZATION - PRACTICE TEST | NEW BRUNSWICK CALCULUS 120 · UNIT C · 25 QUESTIONS

Maximum and Minimum Values and Optimization — 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 $f(x) = -x^2 + 4x + 1$, the maximum value is**

ANSWER _____

Understand It with Pulse | Flag a mistake

2 **For $f(x) = -x^2 + 6x + 2$, the maximum value is**

ANSWER _____

Understand It with Pulse | Flag a mistake

3 **For $f(x) = -x^2 + 8x + 3$, the maximum value is**

ANSWER _____

Understand It with Pulse | Flag a mistake

4 **The function $f(x) = -x^2 + 6x$ has its maximum value at $x =$**

ANSWER _____

Understand It with Pulse | Flag a mistake

5 **For $f(x) = -2x^2 + 8x + 1$, the largest value of the function is**

ANSWER _____

Understand It with Pulse | Flag a mistake

6 **A ball is thrown with height $h(t) = -5t^2 + 20t$. The greatest height, in metres, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

7 **A rectangle with perimeter 40 m has maximum area when it is a square. The maximum area in m^2 is**

ANSWER _____

Understand It with Pulse | Flag a mistake

8 **A rectangle with perimeter 60 m has maximum area when it is a square. The maximum area in m² is**

ANSWER _____

Understand It with Pulse | Flag a mistake

9 **A rectangle with perimeter 80 m has maximum area when it is a square. The maximum area in m² is**

ANSWER _____

Understand It with Pulse | Flag a mistake

10 **A rectangle has perimeter 20 metres. The largest possible area, in m², is**

ANSWER _____

Understand It with Pulse | Flag a mistake

11 **A rectangle has perimeter 36 metres and is a square at its largest area. The side length, in metres, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

12 **Two numbers add to 18. The largest possible product of the two numbers is**

ANSWER _____

Understand It with Pulse | Flag a mistake

13 **A farmer has 40 m of fencing for a rectangular field against a wall, using the wall for one side. The maximum area in m² is**

ANSWER _____

Understand It with Pulse | Flag a mistake

14 **A farmer has 60 m of fencing for a rectangular field against a wall, using the wall for one side. The maximum area in m² is**

ANSWER _____

Understand It with Pulse | Flag a mistake

15 **A farmer has 80 m of fencing for a rectangular field against a wall, using the wall for one side. The maximum area in m² is**

ANSWER _____

Understand It with Pulse | Flag a mistake

16 **A square based box has base side 4 centimetres and height 6 centimetres. Its volume, in cm³, is**

ANSWER

Understand It with Pulse | Flag a mistake

17 **A box with a square base of side 10 cm and height 5 cm has volume in cm³ of**

ANSWER

Understand It with Pulse | Flag a mistake

18 **A box with a square base of side 20 cm and height 5 cm has volume in cm³ of**

ANSWER

Understand It with Pulse | Flag a mistake

19 **A box with a square base of side 30 cm and height 5 cm has volume in cm³ of**

ANSWER

Understand It with Pulse | Flag a mistake

20 **An open box is made from a square sheet by cutting squares from the corners. If the finished box has base 10 centimetres by 10 centimetres and height 3 centimetres, its volume, in cm^3, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

21 **A closed box has a square base of side 5 centimetres. Its volume is 100 cm^3. Its height, in centimetres, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

22 **A farmer fences three sides of a rectangular field against a barn wall with 60 metres of fence. The greatest area, in m^2, is**

ANSWER _____

Understand It with Pulse | Flag a mistake

23 **For $f(x) = x^3 - 2x^2$, the value of f at x = 3 is**

ANSWER _____

Understand It with Pulse | Flag a mistake

24 **For $f(x) = x^3 - 3x^2$, the value of f at x = 3 is**

ANSWER

Understand It with Pulse | Flag a mistake

25 **For $f(x) = x^3 - 4x^2$, the value of f at x = 3 is**

ANSWER

Understand It with Pulse | Flag a mistake

ANSWER KEY

1. 5
2. 11
3. 19
4. 3
5. 9
6. 20
7. 100
8. 225
9. 400
10. 25
11. 9
12. 81
13. 200
14. 450
15. 800
16. 96
17. 500
18. 2000
19. 4500
20. 300
21. 4
22. 450
23. 9
24. 0
25. -9

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