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УТВЕРЖДАЮ
Директор ГБПОУ РА
НФИМбСТ
«27» декабря 2018 г.



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Профессионал
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ГБПОУ РА
Индустриальный техникум
«27» _____ 2018



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QUESTION

1. The function $f(x) = x^2 + 2x - 3$ is defined on the interval $[-2, 4]$. Find the maximum and minimum values of the function.

Solution: The function is a parabola opening upwards. The vertex is at $x = -1$. The interval $[-2, 4]$ contains the vertex. The maximum value is at $x = 4$ and the minimum value is at $x = -1$.

QUESTION

2. The function $f(x) = x^3 - 3x^2 + 2x$ is defined on the interval $[-1, 3]$. Find the maximum and minimum values of the function.

Solution: The function is a cubic polynomial. The derivative is $f'(x) = 3x^2 - 6x + 2$. The critical points are at $x = 1$ and $x = \frac{1}{3}$. The interval $[-1, 3]$ contains both critical points. The maximum value is at $x = 3$ and the minimum value is at $x = \frac{1}{3}$.

QUESTION

3. The function $f(x) = x^4 - 4x^3 + 6x^2 - 4x + 1$ is defined on the interval $[-1, 2]$. Find the maximum and minimum values of the function.

Solution: The function is a quartic polynomial. The derivative is $f'(x) = 4x^3 - 12x^2 + 12x - 4$. The critical points are at $x = 1$ and $x = \frac{1}{2}$. The interval $[-1, 2]$ contains both critical points. The maximum value is at $x = 2$ and the minimum value is at $x = \frac{1}{2}$.

QUESTION

4. The function $f(x) = x^5 - 5x^4 + 10x^3 - 10x^2 + 5x - 1$ is defined on the interval $[-1, 2]$. Find the maximum and minimum values of the function.

Solution: The function is a quintic polynomial. The derivative is $f'(x) = 5x^4 - 20x^3 + 30x^2 - 20x + 5$. The critical points are at $x = 1$ and $x = \frac{1}{2}$. The interval $[-1, 2]$ contains both critical points. The maximum value is at $x = 2$ and the minimum value is at $x = \frac{1}{2}$.

QUESTION

5. The function $f(x) = x^6 - 6x^5 + 15x^4 - 20x^3 + 15x^2 - 6x + 1$ is defined on the interval $[-1, 2]$. Find the maximum and minimum values of the function.

Solution: The function is a sextic polynomial. The derivative is $f'(x) = 6x^5 - 30x^4 + 60x^3 - 60x^2 + 30x - 6$. The critical points are at $x = 1$ and $x = \frac{1}{2}$. The interval $[-1, 2]$ contains both critical points. The maximum value is at $x = 2$ and the minimum value is at $x = \frac{1}{2}$.

QUESTION

6. The function $f(x) = x^7 - 7x^6 + 21x^5 - 35x^4 + 35x^3 - 21x^2 + 7x - 1$ is defined on the interval $[-1, 2]$. Find the maximum and minimum values of the function.

Solution: The function is a septic polynomial. The derivative is $f'(x) = 7x^6 - 42x^5 + 105x^4 - 140x^3 + 105x^2 - 42x + 7$. The critical points are at $x = 1$ and $x = \frac{1}{2}$. The interval $[-1, 2]$ contains both critical points. The maximum value is at $x = 2$ and the minimum value is at $x = \frac{1}{2}$.

QUESTION

7. The function $f(x) = x^8 - 8x^7 + 28x^6 - 56x^5 + 56x^4 - 28x^3 + 8x^2 - 1$ is defined on the interval $[-1, 2]$. Find the maximum and minimum values of the function.

Solution: The function is an octic polynomial. The derivative is $f'(x) = 8x^7 - 56x^6 + 168x^5 - 280x^4 + 224x^3 - 84x^2 + 16x - 1$. The critical points are at $x = 1$ and $x = \frac{1}{2}$. The interval $[-1, 2]$ contains both critical points. The maximum value is at $x = 2$ and the minimum value is at $x = \frac{1}{2}$.

October, 10th ()

: **Classwork / Homework**

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