**Domain & Range**

|  |  |  |  |
| --- | --- | --- | --- |
| Domain = all of the x-values that can go INTO the function.  **How wide does the graph spread?** | Range = all of the y-values you can get OUT of the function. Use the y-coordinate from the absolute minimum/maximum value to help you determine the  range.   |  |  | | --- | --- | | \*If the graph goes **above** the absolute minimum/maximum value, then the range will be  y ≥ y-coordinate. | \*If the graph goes **below** the minimum/maximum value, then the range will be  y ≤ y-coordinate. | |

**Intercepts**

|  |  |
| --- | --- |
| x-intercept = the point (x, 0). You can find the value of x by plugging in zero for y and solving. The x-coordinate from the x-intercept is the **REAL ZERO** of the polynomial. | y-intercept - the point (0, y). You can find the value of y by plugging in zero for x and solving. |
| **If the characteristic does not exists, write N/A.** | |

**Intervals of Increase/Decrease**

|  |  |
| --- | --- |
| Intervals of Increase - the **x-values** of the graph where it goes **UP** from **left to right.** | Intervals of Decrease - the **x-values** of the graph where it goes **DOWN** from **left to right.** |
| Join multiple intervals with a "u,” where “u” stands for Union.  **If the characteristic does not exists, write N/A.** | |

**Relative Maximum/Minimum**

|  |  |
| --- | --- |
| Relative Maximum - the **highest** **point** on a **turn**. | Relative Minimum - the **lowest point** on a **turn**. |
| **If the characteristic does not exists, write N/A.** | |

**Absolute Maximum/Minimum**

|  |  |
| --- | --- |
| Absolute Maximum - the **highest point** of all the points **on the graph**. | Absolute Minimum - the **lowest point** of all the points **on the graph**. |
| **If the characteristic does not exists, write N/A.** | |

**Even/Odd/Neither Functions**

|  |  |  |
| --- | --- | --- |
| Even Functions = have **symmetry** about the **y-axis**. [If you folded the graph along the y-axis, the left side and right side would overlap.] | Odd Function = have **symmetry** about the **origin**. [If you folded the graph along the x & y-axis, the graph would overlap itself.] | Neither = if a function is neither even or odd. |

**End Behavior:**

Describes what f(x) does if you could follow the graph FOREVER!



\*If the **arrow points up**, use **∞**.

\*If the **arrow points down**, use **- ∞**.

Examples: Describe the characteristics for the function given by the graph below.

|  |  |  |
| --- | --- | --- |
|  | | |
|  | | |
| Domain: \_\_\_\_\_\_\_\_\_\_  Range: \_\_\_\_\_\_\_\_\_\_  x-intercept: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  zeros: \_\_\_\_\_\_\_\_\_\_\_  y-intercept: \_\_\_\_\_\_\_  Intervals of Increase: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Intervals of Decrease: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | Relative Maximum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Relative Minimum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Absolute Maximum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  Absolute Minimum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Even/Odd: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  End Behavior: |
|  | | |
|  | | |
| Domain: \_\_\_\_\_\_\_\_\_\_  Range: \_\_\_\_\_\_\_\_\_\_  x-intercept: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  zeros: \_\_\_\_\_\_\_\_\_\_\_  y-intercept: \_\_\_\_\_\_\_  Intervals of Increase: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Intervals of Decrease: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | Relative Maximum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Relative Minimum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Absolute Maximum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  Absolute Minimum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Even/Odd: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  End Behavior: |
|  | | |
|  | | |
| Domain: \_\_\_\_\_\_\_\_\_\_  Range: \_\_\_\_\_\_\_\_\_\_  x-intercept: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  zeros: \_\_\_\_\_\_\_\_\_\_\_  y-intercept: \_\_\_\_\_\_\_  Intervals of Increase: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Intervals of Decrease: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Relative Maximum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Relative Minimum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Absolute Maximum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  Absolute Minimum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Even/Odd: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  End Behavior: | |
|  | | |
|  | | |
| Domain: \_\_\_\_\_\_\_\_\_\_  Range: \_\_\_\_\_\_\_\_\_\_  x-intercept: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  zeros: \_\_\_\_\_\_\_\_\_\_\_  y-intercept: \_\_\_\_\_\_\_  Intervals of Increase: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Intervals of Decrease: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Relative Maximum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Relative Minimum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Absolute Maximum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  Absolute Minimum: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Even/Odd: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  End Behavior: | |