|  |  |
| --- | --- |
| ***Constant Functions*** | |
| a**) Equation** | Written in the form where b is a constant |
| b) **Degree** | 0 (No x term) |
| c) **Shape of graph** |  |
| d**) Number of y-intercepts**  (Point where graph  crosses y axis) | One with coordinates (0, b) |
| e) **Number of x-intercepts**  (Point where graph  crosses x-axis) | None except for the line  which is every point on the x-axis |
| f**) Domain** |  |
| g) **Range** |  |
| h) **Number of Turning**  **Points** | None |
| i) **End Behavior** | i) Extends from Quadrant II to Quadrant I  ii) Extends from Quadrant III to Quadrant IV |

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| --- | --- |
| ***Linear Functions*** | |
| a**) Equation** | Written in the form where m is the slope and b is the y-intercept |
| b) **Degree** | 1 |
| c**) Shape of graph** |  |
| d**) Number of y-intercepts** | One with coordinates (0, b) |
| e) **Number of x-intercepts** | One |
| f**) Domain** |  |
| g) **Range** |  |
| h) **Number of Turning**  **Points** | None |
| i) **End Behavior** | i) (m > 0) Extends from Quadrant III to Quadrant I  (Up in Quadrant I and Down in Quadrant III)  ii) (m < 0) Extends from Quadrant II to Quadrant IV  (Up in Quadrant II and down in Quadrant IV) |
| **Special Case** | Equation x = “c” where c is a constant  One x intercept and no y intercept except for the line x = 0 where all points on the y axis are y intercepts |

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| ***Quadratic Functions*** | |
| a**) Equation** | Written in Standard Form where “a” is the leading coefficient and “c” is the constant term or in Vertex Form  Where (h, k) is the vertex of the parabola. |
| b) **Degree** | 2 |
| c**) Shape of graph** |  |
| d**) Number of y-intercepts** | One with coordinates (0, c) |
| e) **Number of x-intercepts** | **Zero (Minimum Number)** |
|  | **One** |
|  | **Two** **(Maximum Number)** |
| f**) Domain** |  |
| g) **Range** |  |
| h) **Number of Turning**  **Points** | One |
| i) **End Behavior** | i) (a > 0) Extends from Quadrant II to Quadrant I  (Up in Quadrant I and up in Quadrant II)  ii) (a < 0) Extends from Quadrant III to Quadrant IV  (Down in Quadrant III and down in Quadrant IV) |

**Note:**

1. Vertex Form 

Vertex (h, k) k is a maximum value if a < 0

k is a minimum value if a > 0

2. Standard Form 

Vertex   is a maximum value if a < 0

 is a minimum value if a > 0

|  |  |
| --- | --- |
| ***Cubic Functions*** | |
| a**) Equation** | Written in the form where “a” is the leading coefficient and “d” is the constant term |
| b) **Degree** | 3 |
| c**) Shape of graph** |  |
| d**) Number of y-intercepts** | One with coordinates (0, d) |
| e) **Number of x-intercepts** | **One (Minimum Number)** |
|  | **Two** |
|  | **Three** **(Maximum Number)** |
| f**) Domain** |  |
| g) **Range** |  |
| h) **Number of Turning**  **Points** | **Zero →** if there is one x intercept  **Two →** if there is one or two x intercepts |
| i) **End Behavior** | i) (a > 0) Extends from Quadrant III to Quadrant I  (Down in Quadrant III and up in Quadrant I)  ii) (a < 0) Extends from Quadrant II to Quadrant IV  (Up in Quadrant II and down in Quadrant IV) |