**Characteristics of Quadratic Functions**

**Honors Math 2**

**Two Forms for a Quadratic Function:**

|  |  |
| --- | --- |
| **Vertex Form** | **y = a(x – h)2 + k** |
| **Standard Form** | **y = ax2 + bx + c** |

**Comparison of how to find some characteristics from each form.**

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| --- | --- | --- |
| **Characteristics** | **Standard Form**  **y = ax2 + bx + c** | **Vertex Form**  **y= a(x – h)2 + k** |
| **Vertex** | (-,?)  Plug x = - into the equation to find y | (h, k) |
| **Axis of Symmetry** | x = - | x = h |
| **y-intercept** | (0, c) | (0, ?)  Plug x = 0 into the equation to find y |

**Find each characteristic for the functions described.**

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| **Characteristic** | **y = x2 – 2x – 3** | **y = (x – 1)2 – 4** |
| **Vertex** |  |  |
| **Axis of symmetry** |  |  |
| **y-intercept** |  |  |
| **x-intercept(s)** |  |  |
| **Domain** |  |  |
| **Range** |  |  |
| **Intervals of Increasing** |  |  |
| **Intervals of Decreasing** |  |  |

**Find the characteristic parts of each function. Use this information to produce the graph.**

**1) y = -x2 + 6x – 2**

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| --- | --- |
| **Characteristic** | **Value** |
| **Vertex** |  |
| **Axis of**  **Symmetry** |  |
| **y-intercept** |  |
| **x-intercept** |  |
| **Domain** |  |
| **Range** |  |
| **Interval of Increasing** |  |
| **Interval of Decreasing** |  |

|  |  |
| --- | --- |
| **X** | **Y** |
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**2) f(x) = 2(x + 1)2 + 3**

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| **X** | **Y** |
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| **Characteristic** | **Value** |
| **Vertex** |  |
| **Axis of**  **Symmetry** |  |
| **y-intercept** |  |
| **x-intercept** |  |
| **Domain** |  |
| **Range** |  |
| **Interval of Increasing** |  |
| **Interval of Decreasing** |  |

**3. f(x) = x2 + 4x – 5**

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| **X** | **Y** |
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| --- | --- |
| **Characteristic** | **Value** |
| **Vertex** |  |
| **Axis of**  **Symmetry** |  |
| **y-intercept** |  |
| **x-intercept** |  |
| **Domain** |  |
| **Range** |  |
| **Interval of Increasing** |  |
| **Interval of Decreasing** |  |

**4. y = (x – 2)2**

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| **X** | **Y** |
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| --- | --- |
| **Characteristic** | **Value** |
| **Vertex** |  |
| **Axis of**  **Symmetry** |  |
| **y-intercept** |  |
| **x-intercept** |  |
| **Domain** |  |
| **Range** |  |
| **Interval of Increasing** |  |
| **Interval of Decreasing** |  |

**5. y = -x2 – 4x + 12**

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| **X** | **Y** |
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| --- | --- |
| **Characteristic** | **Value** |
| **Vertex** |  |
| **Axis of**  **Symmetry** |  |
| **y-intercept** |  |
| **x-intercept** |  |
| **Domain** |  |
| **Range** |  |
| **Interval of Increasing** |  |
| **Interval of Decreasing** |  |

**6. y = 2(x + 1)2 + 1**

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| **X** | **Y** |
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| --- | --- |
| **Characteristic** | **Value** |
| **Vertex** |  |
| **Axis of**  **Symmetry** |  |
| **y-intercept** |  |
| **x-intercept** |  |
| **Domain** |  |
| **Range** |  |
| **Interval of Increasing** |  |
| **Interval of Decreasing** |  |