**AC Math** 1

Name _____

**Quadratics – Equations, Graphs, and Characteristics**

Date ____/____/____ Day ____ Block ____

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Graph the following quadratic equations neatly on graph paper.

1. $y = x^2 + 8x + 15$ 2. $y = (x - 3)(x + 1)$ 3. $y = -(x - 2)^2 + 1$

Complete the table. Show all algebraic work neatly on the bottom of the page.

| | Standard Form | Intercept Form | Vertex Form | Axis of Symmetry | Vertex | x-Int(s) | y-Int. | Range | Interval of Increase | Interval of Decrease |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | $y = x^2 + 8x + 15$ | $y=(x+5)(x+3)$ | $y=(x+4)^2-1$ | $x=-4$ | $(-4,-1)$ | $(-5,0)$ $(-3,0)$ | $(0,15)$ | $[-1,\infty)$ | $(-4,\infty)$ | $(-\infty,-4)$ |
| 2 | $y=x^2-2x-3$ | $y = (x - 3)(x + 1)$ | $y=(x-1)^2-4$ | $x=1$ | $(1,-4)$ | $(3,0)$ $(-1,0)$ | $(0,-3)$ | $[-4,\infty)$ | $(1,\infty)$ | $(-\infty,1)$ |
| 3 | $y=-x^2+4x-3$ | $y=-(x-3)(x-1)$ | $y = -(x-2)^2+1$ | $x=2$ | $(2,1)$ | $(3,0)$ $(1,0)$ | $(0,-3)$ | $(-\infty,1]$ | $(-\infty,2)$ | $(2,\infty)$ |
| * | $y=x^2-6x+8$ | $y=(x-2)(x-4)$ | $y=(x-3)^2-1$ | $x = 3$ | $(3,-1)$ | (2,0) & (4,0) | $(0,8)$ | $[-1,\infty)$ | $(3,\infty)$ | $(-\infty,3)$ |

① $y = x^2 + 8x + 15$

$y = (x^2+8x+16)+15-16$

$y = (x+4)^2-1$

② $y = x^2 + x - 3x - 3$

$y = x^2 - 2x - 3$

$y = (x^2-2x+1)-3-1$

$y = (x-1)^2-4$

③ $y = -(x^2-4x+4)+1$

$y = -x^2+4x-4+1$

$y = -x^2+4x-3$

$y = -(x^2-4x+3)$

$y = -(x-3)(x-1)$