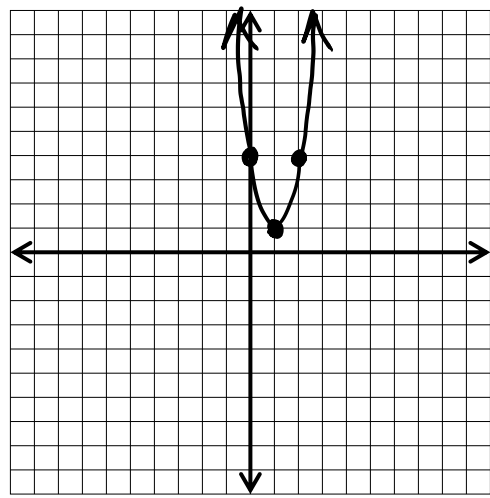


Review – graphing, factoring, “i”, comp. the square
Algebra 2 Trig
 (no calculator)

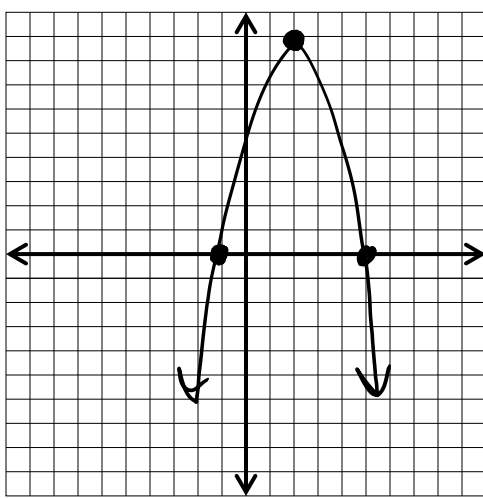


1) Graph the function and identify the following important information: $y = 3(x-1)^2 + 1$



- a) Vertex: $(1, 1)$
- b) Opens: up
- c) A.O.S.: $x = 1$
- d) A point: $(0, 4)$
- e) A symmetric point: $(2, 4)$
- f) domain: \mathbb{R}
- g) range: $y \geq 1$

2) Write the Vertex Form OR Factored Form equation of the graph below. (Find “a” first!!!)



$$y = a(x-h)^2 + k$$

$$0 = a(5-2)^2 + 9$$

$$-9 = 9a$$

$$\boxed{-1 = a}$$

$(2, 9)$ $(5, 0)$
 h k x y

Vertex
 $y = -(x-2)^2 + 9$

Factored
 $y = -(x+1)(x-5)$

3) Put the equation into **Standard Form**:

$$y = 5(x+1)^2 - 10$$

$$y = 5(x^2 + 2x + 1) - 10$$

$$y = 5x^2 + 10x + 5 - 10$$

3) $y = 5x^2 + 10x - 5$

4) **Factor** the expressions:

a) $2x^2 + 2x - 24$
 $2(x^2 + x - 12)$

4a) $2(x+4)(x-3)$

$$\begin{array}{r} 20 \\ \times -3 \\ \hline 17 \end{array}$$

b) $5x^2 + 17x - 12$
 $(x + \frac{20}{5})(x - \frac{3}{5})$

4b) $(x+4)(5x-3)$

5) Given the solutions, find an equation in **Standard Form**.

$x = 4$ and $-\frac{4}{3}$

$$(x-4)(3x+4)$$

$$3x^2 + 4x - 12x - 16$$

5) $3x^2 - 8x - 16$

6) **Factor AND solve!**

$$\begin{array}{r} -30 \\ \times 3 \\ \hline -10 \\ \times -7 \end{array}$$

$2x^2 - 7x - 15 = 0$

$$(x-5)(2x+3)$$

$$(x - \frac{10}{2})(x + \frac{3}{2})$$

6) $x = 5, -\frac{3}{2}$

For #7 - 9, simplify each expression. Remember that there should be no powers of i in the final answer.

7) $(-1-4i) + (3+7i)$

7) $2 + 3i$

8) $(3+3i)(6-3i)$ $18 - 9i + 18i - 9i^2$
 $18 + 9i + 9$

8) $27 + 9i$

9) $(3i)(7i)(-2i)$ $-42 \cdot i^3$
 $-42 \cdot -i$

9) $42i$

For #10 - 11:

- a) Rewrite in vertex form by Completing the Square.
 b) Give the vertex and the range of the parabola.

10) $y = x^2 - 14x + 29$
 $y = (x^2 - 14x + \underline{49}) - \underline{49} + 29$

11) $y = 4x^2 + 8x + 9$
 $y = 4(x^2 + 2x + \underline{1}) - \underline{4} + 9$

Vertex Form $y = (x-7)^2 - 20$

Vertex Form $y = 4(x+1)^2 + 5$

Vertex $(7, -20)$

Vertex $(-1, 5)$

Range $y \geq -20$

Range $y \geq 5$