

Name: _____

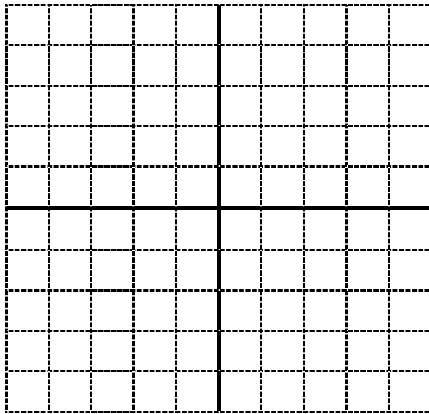
Date: _____

Transformations Worksheet

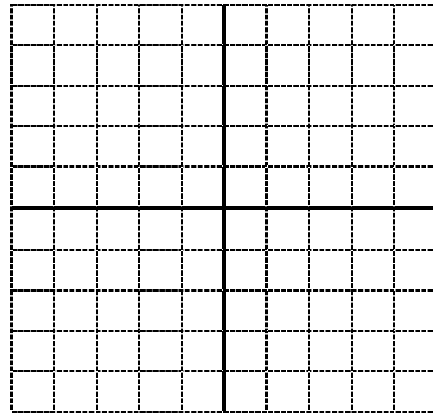
For each of the following graphs,

- i) Describe the transformations **in order**
- ii) Sketch the transformations
 - Always start with $y = x^2$.
 - you may reflect and vertically stretch in one step
 - you may shift vertically horizontally in one step
- iii) Label the new vertex
- iv) State the axis of symmetry

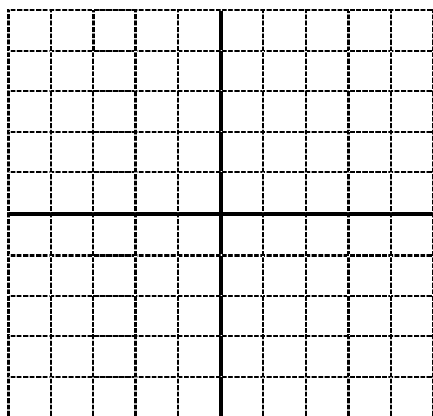
$$y = -x^2 + 2$$



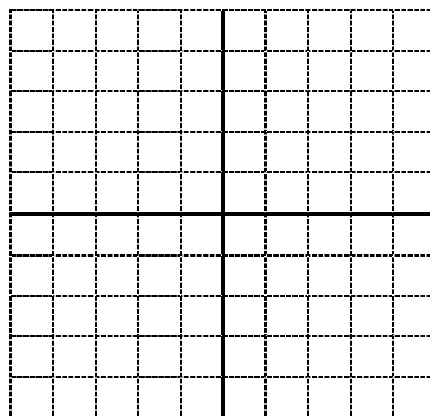
$$y = (x - 3)^2 + 1$$



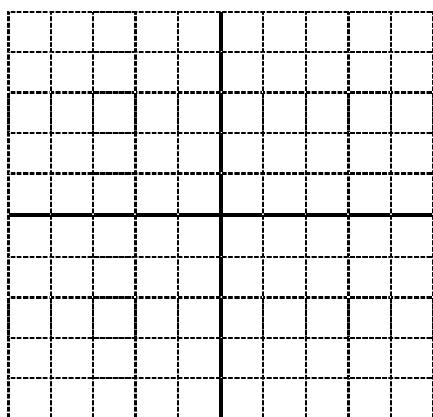
$$y = 2x^2 - 5$$



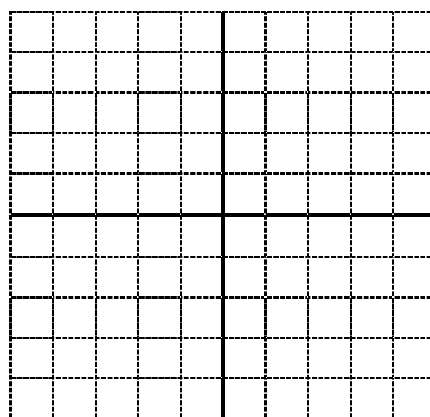
$$y = -3(x + 1)^2$$



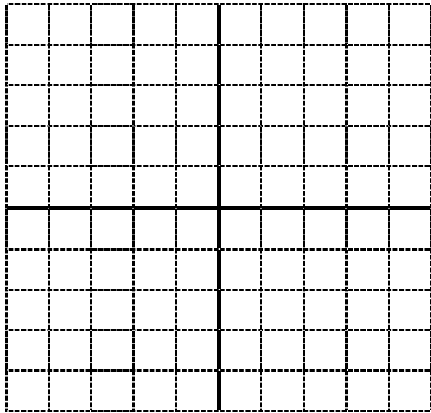
$$y = -(x + 2)^2 + 4$$



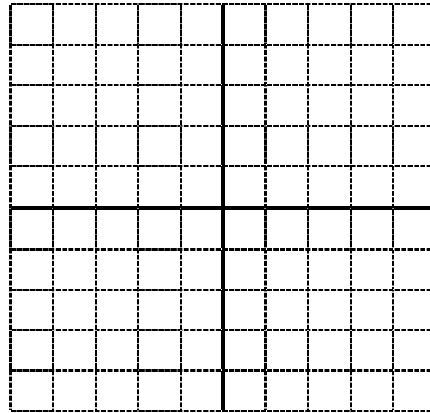
$$f(x) = -\frac{1}{2}x^2$$



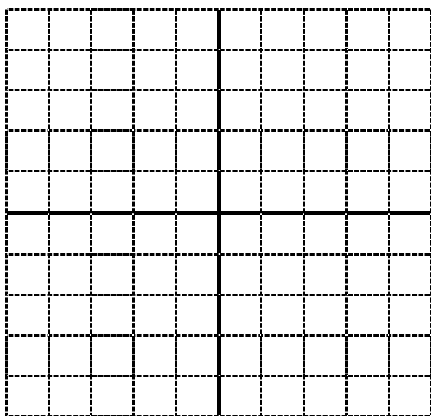
$$y = \frac{1}{4}x^2 - 4$$



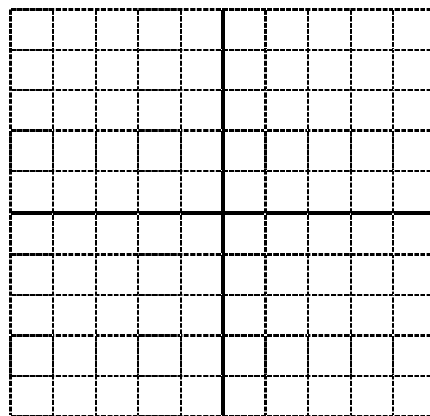
$$y = 4(x - 3)^2 - 2$$



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



$$y = \frac{1}{2}(x - 3)^2 + 1$$



Write a relation for a parabola in vertex form that satisfies each set of conditions:

11) vertex at (1,-2); opens downward; the same shape as $y = x^2$

12) vertex at (-2, 3); opens upward; narrower than $y = x^2$

13) vertex at (3, 1); opens downward; wider than $y = x^2$

14) A parabola is stretched by a factor of 5, shifted to the left 4 units and shifted up 10 units. Write the equation of the parabola.

15) A parabola is compressed by a factor of $1/6$, reflected in the x-axis, shifted to the right 7 units and shifted down 3 units. Write the equation of the parabola.