

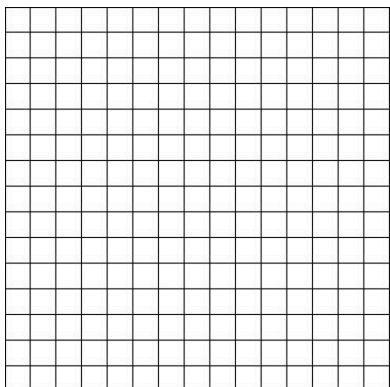
Aim: How do we graph quadratic equations where $a \neq \pm 1$?

How do we find the equation for a parabola given the vertex and a point on the parabola?

I. Do Now:

1. Write in vertex form and sketch the graph:

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



2. Solve for x by taking the square root of both sides:

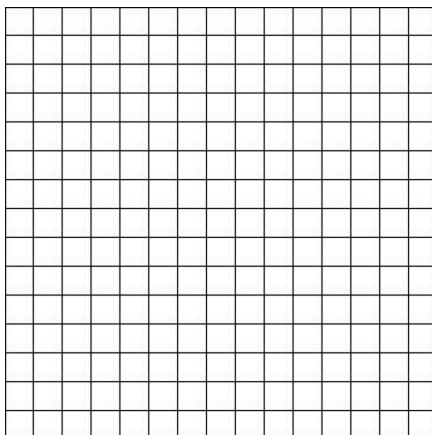
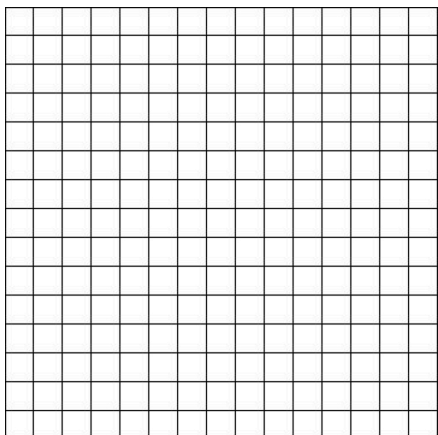
$$(x - 5)^2 = 4$$

II. Completing the Square When $a \neq 1$

3. Sketch the graph:

(a) $y = 2x^2 + 12x + 21$

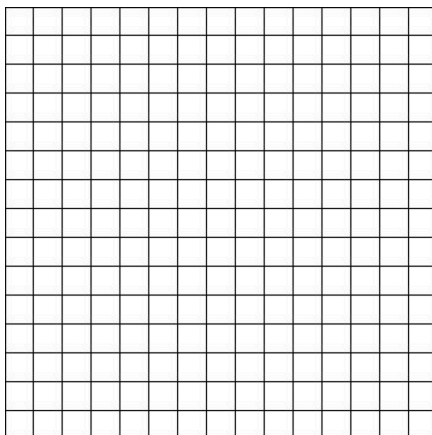
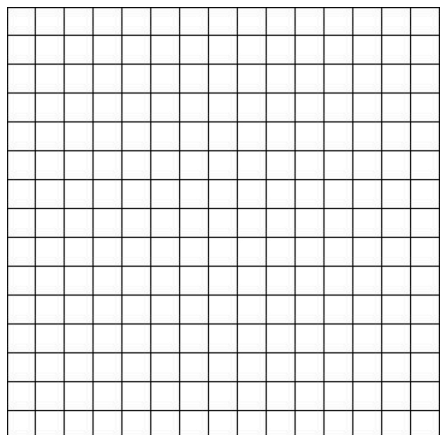
(b) $y = -x^2 - 2x + 2$



III. Finding the Equation for a Parabola Given the Vertex and a Point on the Parabola

4. (a) Given that the vertex of a parabola is $(4, -3)$ and that the parabola passes through the point $(1, 0)$, find the equation and sketch its graph.

(b) Given that the vertex of a parabola is $(-3, -1)$ and that the parabola passes through the point $(-1, 1)$, find the equation and sketch its graph.



IV. Write in vertex form and sketch the graph:

5. $y = -2x^2 - 16x - 28$

