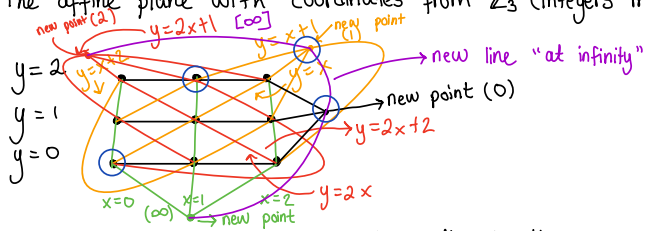- The affine plane with coordinates from $\mathbb{Z}_3$ (integers mod 3)

- We'll make a projective plane by adding to this.
- How can we add points and/or lines to make this a projective plane?
- Add a new point for each class of parallel lines, where the lines in the class meet.
- But adding these new points to make axiom II of projective planes work has messed up axiom I, so we add one new line to all the new points are on.
- Do we satisfy axiom III (four points, no three are on the same line)
- If we want to extend the affine coordinates to the new points, what should they do?
- We designate them by the slope of their formerly parallel class.
- We describe the "line at infinity" by [∞].
- In fact proffessionals write lines like $y = mx + b$ as $[m, b]$
- ((x, y) is on $[m, b]$ if $y = T(m, b)$ for some 3-place function T.)