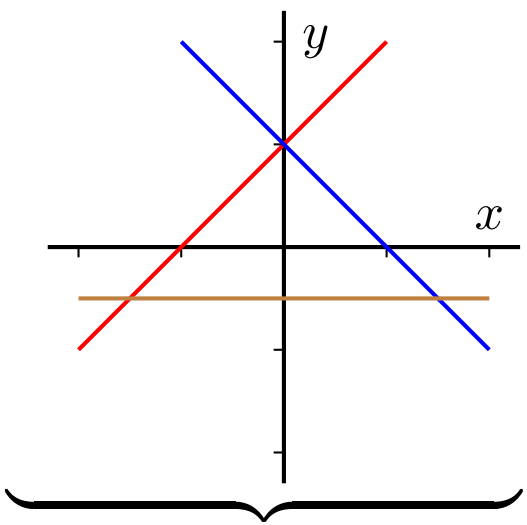
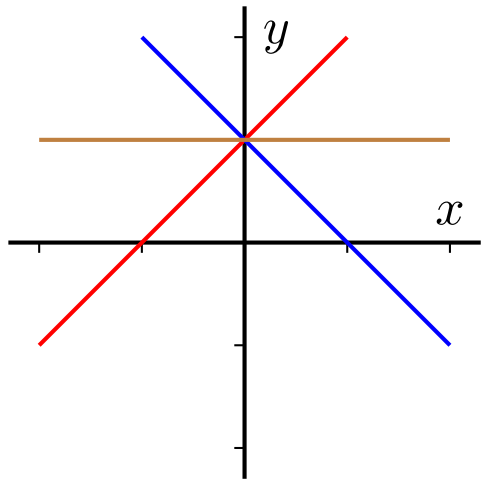
Examples of Singular 3D Systems

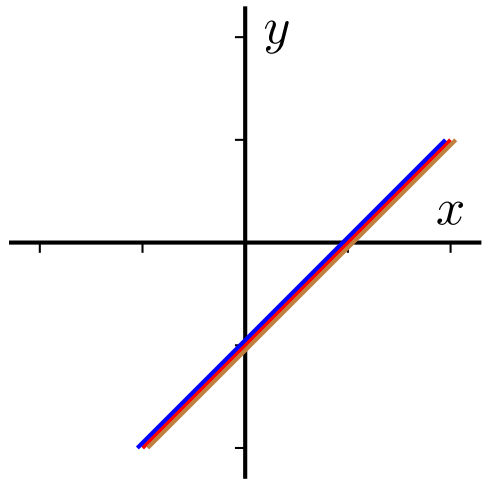
Generally any three planes in 3D intersect in a point. A system with this property is non-singular. Gaussian elimination works! Geometrically singular systems arise in a variety of ways. In the figures below think of the lines as the intersections with the xy plane of a plane parallel to the z axis.



no points of intersection



three planes intersect in a line
infinity of solutions



three overlapping planes
2D infinity of solutions

Can you geometrically think of other cases?