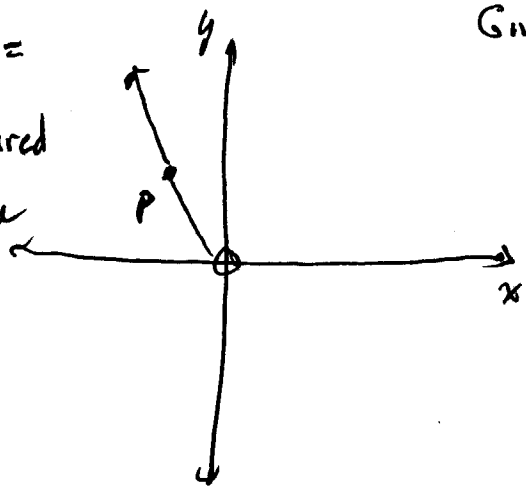
Sec 8.2

30. Let A be the "punctured plane"; that is, A is the set of all points in the Cartesian plane except the origin $(0, 0)$. A relation R is defined on A as follows: For all p_1 and p_2 in A, $p_1 \; R \; p_2 \Leftrightarrow p_1$ and p_2 lie on the same half line emanating from the origin.

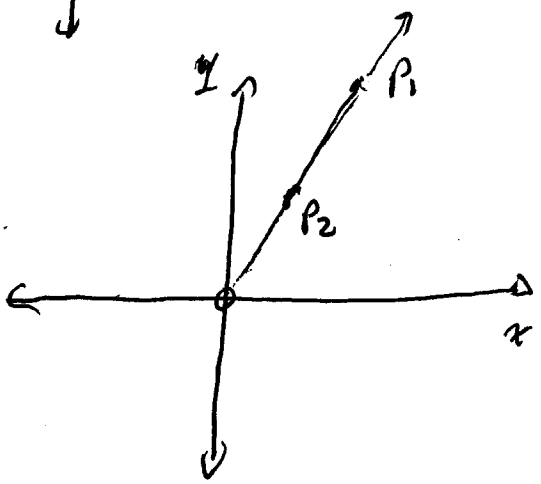
The Punctured Plane Relation is an Equivalence Relation

Set A = The Punctured Plane



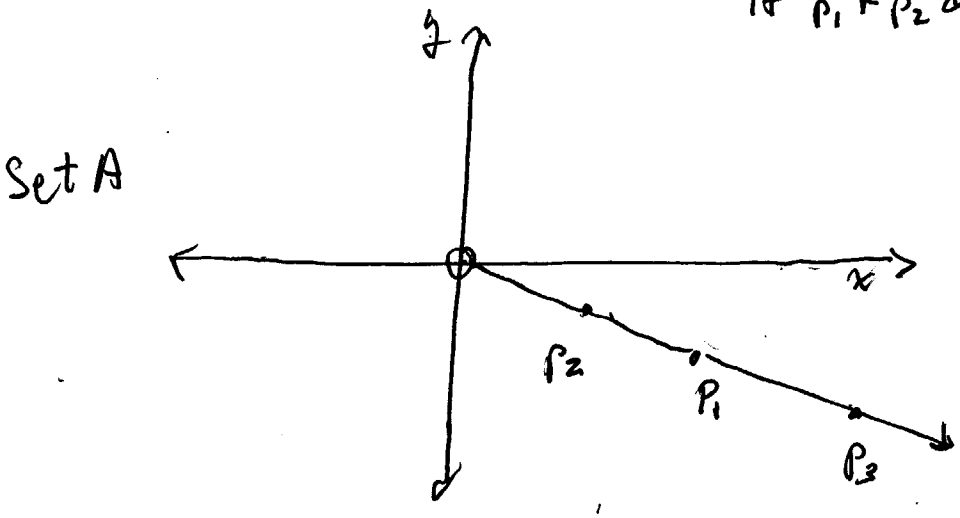
Given any point p in A, $p R p$. ✓

R is reflexive



Given any two points P_1 and P_2 if $P_1 R P_2$, then $P_2 R P_1$ ✓

R is symmetric



Given any 3 points P_1, P_2, P_3, if $P_1 R P_2$ and $P_2 R P_3$, then $P_1 R P_3$. ✓

R is transitive

Since R is reflexive, symmetric, and transitive, R is an Equivalence Relation.