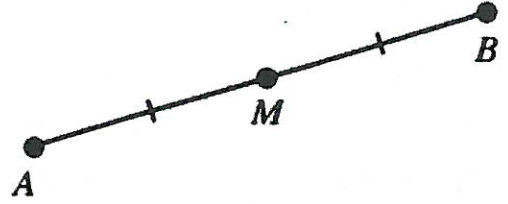


2.5-6 Proofs about Segments, Angles and Geometric Relationships

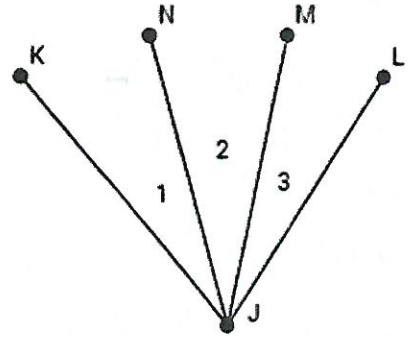
1) Prove $AM = MB$ given $AB = AM + MB$.

Statement	Reasons
$AB = AM + MB$	Given
$AB = AM + MB$	Segment Addition Post.
$AB = AB$	Reflexive
$AM + AM = AM + MB$	substitution
$-AM \quad -AM$	
$AM = MB$	Subtraction POE



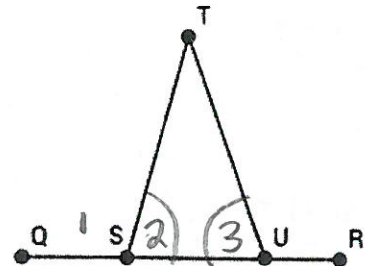
2) Prove $m\angle NJL = m\angle KJM$ given $m\angle 1 = m\angle 3$.

Statement	Reason
$\angle 1 \cong \angle 3$	Given
$\angle 1 + \angle 2 \cong \angle 3 + \angle 2$	Addition Property of Equality
$\angle KJM \cong \angle 1 + \angle 2$	Angle Addition Postulate
$\angle NJL \cong \angle 2 + \angle 3$	
$\angle NJL \cong \angle KJM$	Substitution.



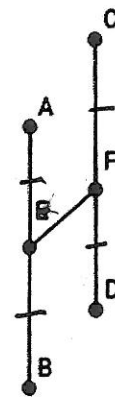
34) Given $m\angle TSU = m\angle TUS$, prove $\angle QST$ and $\angle TUS$ are supplementary.

Statements	Reasons
$\angle 2 \cong \angle 3$	Given
$\angle 1 + \angle 2 = 180^\circ$	Linear Pair Postulate.
$\angle 1 + \angle 3 = 180^\circ$	Substitution



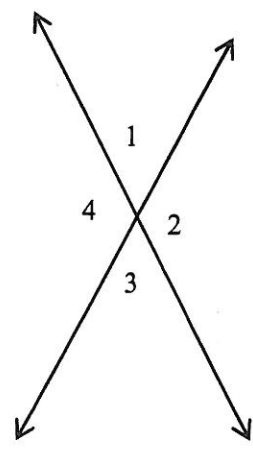
5) Given $CF = EB$ and segment EF bisects AB and CD , prove $AE = DF$.

Statement	Reason
$CF = EB$	Given
\overline{EF} bisects AB and CD	Given
$\overline{AE} \cong \overline{EB}$	Def of Bisector
$\overline{CF} \cong \overline{DF}$	Def of Bisector
$\overline{AE} \cong \overline{CF}$	Substitution
$\overline{AE} \cong \overline{DF}$	Substitution



7) Prove the vertical angles theorem. Given two intersecting lines create four angles, $\angle 2$, $\angle 3$ and $\angle 4$ and $\angle 1$ and $\angle 3$ are vertical, prove they are congruent using the linear pair postulate.

Statement	Reason
$m\angle 1 + m\angle 2 = 180^\circ$	Linear Pair Postulate
$m\angle 2 + m\angle 3 = 180^\circ$	Linear Pair Postulate
$180^\circ = 180^\circ$	Reflexive Property
$m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3$	Substitution
$m\angle 1 = m\angle 3$	Subtraction Property of Equality



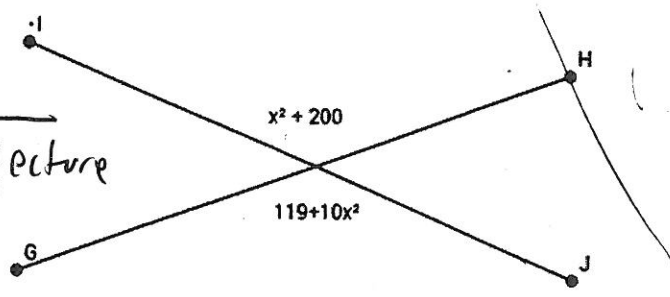
Can be proven

cannot be proven

8) Why is the rule for vertical angles a theorem and the rule for linear pairs a postulate?

9) Prove $x = 3$.

Statements	Reasons
$x^2 + 200 = 119 + 10x^2$	Vertical Angles Conjecture
$-x^2 - 119 - 119 - x^2$	Subtraction POE
$81 = 9x^2$	Division POE
$9 = x^2$	
$3 = x$	Exponentiation POE



10) How do you disprove something?

Find a counterexample.