COLLEGE GEOMETRY
HOMEWORK 4

JANET VASSILEV

Due February 27 by 8 a.m.

(1) Prove that if $\overrightarrow{a}$, $\overrightarrow{b}$, and $\overrightarrow{c}$ are rays with a common endpoint, no two of which are collinear and all lying in a half rotation of ray $\overrightarrow{r}$, then one of them lies between the other two.

(2) Prove the Transitive Property of Congruence for angles.

(3) Prove the Angle Addition Theorem.

(4) Prove the Angle Subtraction Theorem.

(5) Prove that vertical angles are congruent. (The Vertical Angles Theorem)

(6) Give the definition of a linear triple of angles (found in the book) and prove that the sum of the measures of the angles in a linear triple add to 180.

(7) In the definition that you gave of linear triple of angles above, one of the conditions can be omitted. Give me one of the conditions that could be omitted and show that it follows from the other two conditions.

(8) Prove that if ℓ is a line and P a point on ℓ then there is a unique line m that is perpendicular to ℓ at P.