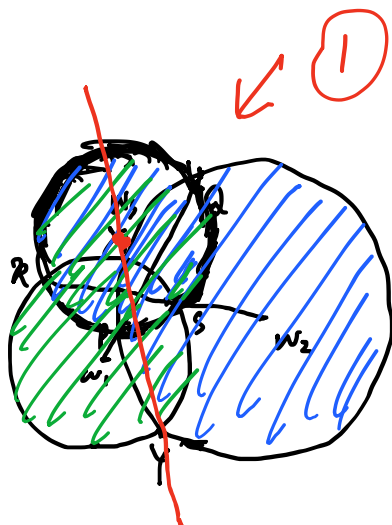


Given circles ω_1 and ω_2 intersecting at points X and Y , let ℓ_1 be a line through the center of ω_1 intersecting ω_2 at points P and Q and let ℓ_2 be a line through the center of ω_2 intersecting ω_1 at points R and S . Prove that if P, Q, R and S lie on a circle then the center of this circle lies on line XY .



$$W_2, W_3 \quad PQ$$

$$W_1 W_3^2 - r_3^2 = W_1 W_2^2 - r_2^2$$

$$W_1, W_3 \quad RS$$

$$W_2 W_3^2 - r_3^2 = W_1 W_2^2 - r_1^2$$

$$- \quad - \quad - \quad - \quad -$$

$$W_1 W_3^2 - W_1 W_2^2 = -r_2^2 + r_1^2$$

$$W_1 W_3^2 - r_1^2 = W_2 W_3^2 - r_2^2$$

$$||$$

$$||$$

$$Pow_{(W_1)}(W_3)$$

$$Pow_{(W_2)}(W_3)$$

Q