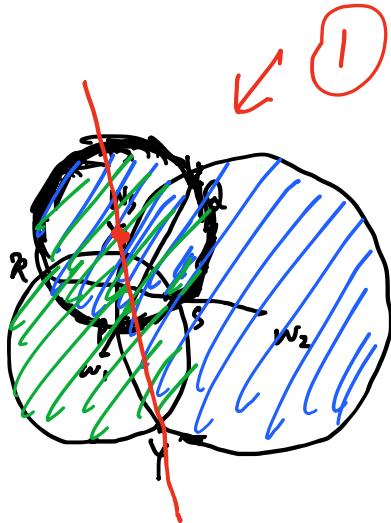


Given circles ω_1 and ω_2 intersecting at points X and Y , let ℓ_1 be a line through the center of ω_1 intersecting ω_2 at points P and Q and let ℓ_2 be a line through the center of ω_2 intersecting ω_1 at points R and S . Prove that if P, Q, R and S lie on a circle then the center of this circle lies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



$$\omega_2, \omega_3 \quad PQ$$

$$\omega_1 \omega_3^2 - r_3^2 = \omega_1 \omega_2^2 - r_2^2$$

$$\omega_1, \omega_3 \quad RS$$

$$\omega_2 \omega_3^2 - r_3^2 = \omega_2 \omega_1^2 - r_1^2$$

$$\omega_1 \omega_3^2 - r_1^2 = \omega_2 \omega_3^2 - r_3^2$$

$$\parallel \qquad \parallel$$

$$P_{\omega_1(\omega_3)}(\omega_3) \quad P_{\omega_2(\omega_3)}(\omega_3)$$

②