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Hours: MWF 11:20 – 12:20 MW 1:40 – 2:40

1. Let $ABCD$ a quadrilateral. Let X be the trisecting point of AB closer to A. Let Y be the midpoint of BC and Z be the midpoint of CD. Let W be the trisecting point of AD closer to A. Find the position vector of the intersection P of XZ and YW in terms of the position vectors of A, B, C and D. In what ratio does P divide XZ?

2. Let M be the intersection point of the perpendicular chords AB and CD of circle k whose center is O. Show that $\overrightarrow{OA} + \overrightarrow{OB} + \overrightarrow{OC} + \overrightarrow{OD} = 2\overrightarrow{OM}$.