Sketching a Mechanical Gear Train: Tooth Profiles and Shaft Alignment

Original tasks 1, 2 / independent work

Task 1

A two-gear train has N1 = 12 and N2 = 18 teeth with p = 4 mm. Compute both pitch diameters and the center distance, then describe where the mesh point lies.

Task 2

For a gear with 20 teeth, state the angular pitch and the angle between every second tooth. Explain how this controls tooth spacing.

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Original tasks 3, 4 / independent work

Task 3

A three-gear train has pitch diameters 20 mm, 30 mm, and 40 mm in order. Compute the two center distances and describe the shaft centerline.

Task 4

A gear has pitch radius 12 mm, p = 4 mm, addendum multiplier 0.8, and dedendum multiplier 1.0. Compute the addendum and dedendum radii and state the tooth-height range.