Rigid alignment and arclength representations of closed curves — review sheet

Use this after attempting the worked examples and practice. Explain each claim in words before calculating.

Key ideas

- Representation fixes what information is available.
- RMS needs units and a correspondence rule.
- Proper rigid alignment removes translation and rotation while retaining size and handedness.
- Uniform polygonal arclength is a sampling convention with a fixed start and direction.
- Implementation checks, geometric evidence and clinical validation answer different questions.

Common errors and repairs

Treating any equal-length arrays as corresponding. Document how each index maps to the object.

Calling the vertex mean a center of mass. Specify the averaging measure and density before using that interpretation.

Assuming resampling recovers missing geometry. Interpolation stays on the supplied polygon.

Retrieve without your notes

- What are the units of squared RMS and RMS?
- Which determinant is required for a proper rotation?
- Why is the closing endpoint not repeated?

Readiness check

- Choose a representation and list the information it retains and discards.
- Compute centering, a fixed-correspondence RMS and a proper rigid alignment diagnostic.
- Explain why equal vertex counts do not establish correspondence.
- Compare index matching with uniform polygonal arclength resampling and report remaining limitations.