Pita form: perimeter halving on convex 2D body
-as performed in L17, but can be smooth

Alexandrov-Pogorelov Theorem: [1950/1973]
every convex metric, topologically a sphere, is realized as the surface of a unique convex 3D body \( \leadsto \) BEYOND POLYHEDRA
-proof by limiting argument + Alexandrov

D-form: glue together 2 convex 2D bodies of equal perimeter developable, from a dream... [Tony Wills]

Seam form: glue together 2D bodies to satisfy Alexandrov-Pogorelov
-properties:
1= convex hull of seams
2= creases (other than seams) are line segments with endpoints at (strict) vertices or tangent to seams impossible if 2D bodies convex
\( \Rightarrow \) D-forms have no seams & pita forms have \( \leq 1 \) crease & seam endpoints
LET'S MAKE SOME D-FORMS!

Proof of (1):
- **Minkowski's Theorem**: any convex body is the convex hull of its extreme points.
  - a tangent plane hits just the point.
- extreme point can't be locally flat AND convex:
- curvature = area of tangent normals on Gauss sphere
  => positive at extreme point of convex body.

Proof of (2):
- locally flat crease point has range of tangent planes between two extremes
- point can't be extreme by (1)
  => all tangent planes hit surface
  => surface continues along line of intersection, remaining a crease by tangent planes, until not locally flat
- if an endpoint is not a vertex, still zero curvature
  => must be tangent to seam or else get third normal direction => Gauss area > 0.
- Rolling belt: half way
  
- to work: just like a convex body

- Alexandrov implementation

- Folding nonconvex polyhedra: (see O'Rourke 2010 & Spring 2005)

  Burago-Zalgaller Theorem: [1960; 1996]
  every polyhedral metric has an isometric polyhedral realization in 3D,
  noncrossing if metric is orientable or has boundary

  - uses Nash's "spiraling perturbations"
  - is "strongly corrugated"
  - finite # polygons ... but no bound known

  OPEN: algorithm to find realization?