Line Simplification in ArcGIS

What is it?
- Algorithm that removes redundant points
  - User sets tolerance
- Two types in ArcGIS:
  - Point Remove
  - Bend Simplify
What is it?

- Algorithm that removes redundant points
  - User sets tolerance

- Two types in ArcGIS:
  - Uses Douglas-Peucker Algorithm (1973)
  - Faster than Bend Simplify
  - More blocky / jagged appearance

24 points to 5 points

What is it?

- Algorithm that removes redundant points
  - User sets tolerance

- Two types in ArcGIS:
  - Uses an advanced algorithm that better approximates curves
  - Slower and more memory intensive
  - Better cartographic quality

24 points to 11 points
Why use it?

- Faster plotting time
- Reduced storage space
- Removal of redundant points
- Faster vector-raster conversion
- Tool also available for polygons

How it works

Douglas-Peucker algorithm

[ Tolerance ]

Step 1: Draw line between two ends and calculate distance to furthest point
**How it works**

Douglas-Peucker algorithm

### Tolerance

**Step 2:** Draw line through most distant point and recalculate furthest point(s).

**Step 3:** Add those points to the line if distance exceeded tolerance.
How it works
Douglas-Peucker algorithm

Step 4: No points are outside of tolerance, line is complete.

Where is it?
Specify Point Remove or Bend Simplify
Specify Tolerance
RLIS data
Columbia River

Line Simplify
50 foot
Line Simplify
200 foot
Questions

1) The tool used for line simplification is the simplify line tool.

2) The two line simplification algorithms available in ArcGIS are point- remove and bend simplify.

3) The bend simplify algorithm provides the best cartographic quality.

References:
ArcGIS Desktop Help, 9.3