

Accumulations—Arclength and Area

In groups of four, try to estimate the area of the ellipse below using the grid provided.

- First, underestimate the area using the larger grid;
- second, overestimate the area using the larger grid;
- third, underestimate the area using the smaller grid and
- fourth, overestimate the area using the smaller grid.

$$\leq \leq \text{EXACT AREA} \leq \leq$$

How could these estimates be improved?

Again in groups of four, estimate the arclength of the ellipse below.

- First, underestimate the arclength to the nearest inch;
- second, overestimate the arclength to the nearest inch;
- third, underestimate the arclength to the nearest quarter inch and
- fourth, overestimate the arclength to the nearest quarter inch.

$$\leq \leq \text{EXACT LENGTH} \leq \leq$$

Again, how could these estimates be improved?

Does this suggest as strategy for such accumulation problems?

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