

SECTION 2.4: ARC LENGTH OF A CURVE AND SURFACE AREA

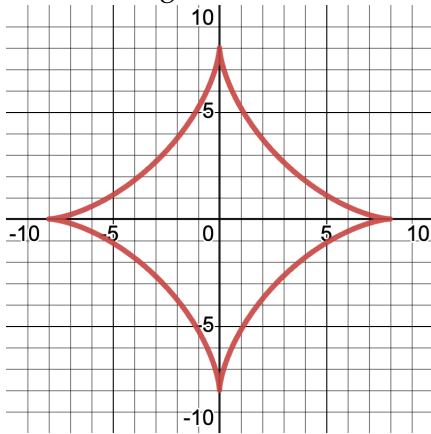
DAY 2

Set up, *but do not evaluate*, definite integrals for these length and area problems.

1. Find the length of the curve $y = e^x$ from $x = 0$ to $x = 1$.
2. Find the surface area of the surface of revolution from rotating $y = e^x$ from $x = 0$ to $x = 1$ around the x -axis.
3. Find the length of the curve $y = \frac{x^4}{4} + \frac{1}{8x^2}$ from $x = 1$ to $x = 2$.

4. Find the surface area of the surface of revolution from rotating $y = x^2$ from $x = 0$ to $x = 1$ around the y -axis.

5. Find the length of the curve $x^{2/3} + y^{2/3} = 4$ (graphed below).



6. Now do triage. Which of the integrals in problems 1 through 5 can actually be computed by hand? Try those. For the others, go online and use your favorite tool to compute values for the definite integrals. -