## Section 2.4: Arc Length of a Curve and Surface Area <br> 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 $y=\frac{x^{4}}{4}+\frac{1}{8 x^{2}}$ 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 $\mathbf{1}$ through $\mathbf{5}$ 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.
