## 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.