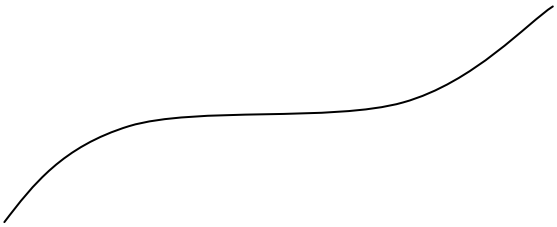
Calculus BC

Section 7.4 - Arc Length and Surfaces of Revolution

Finding the length of a curve



length =

=

=

=

Arc Length

L =

If we have a point on $f(x)$ in which $\frac{dy}{dx}$ does not exist, we can use

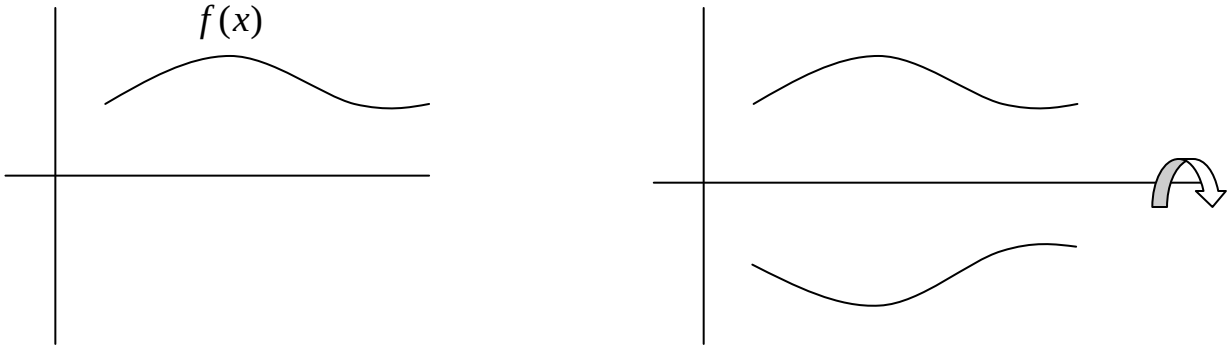
L =

1. Find the length of the curve $y = x^{\frac{3}{2}}$ from $x = 0$ to $x = 4$.

2. Find the length of the curve $x = \frac{y^3}{6} + \frac{1}{2y}$ from $y = 2$ to $y = 3$.

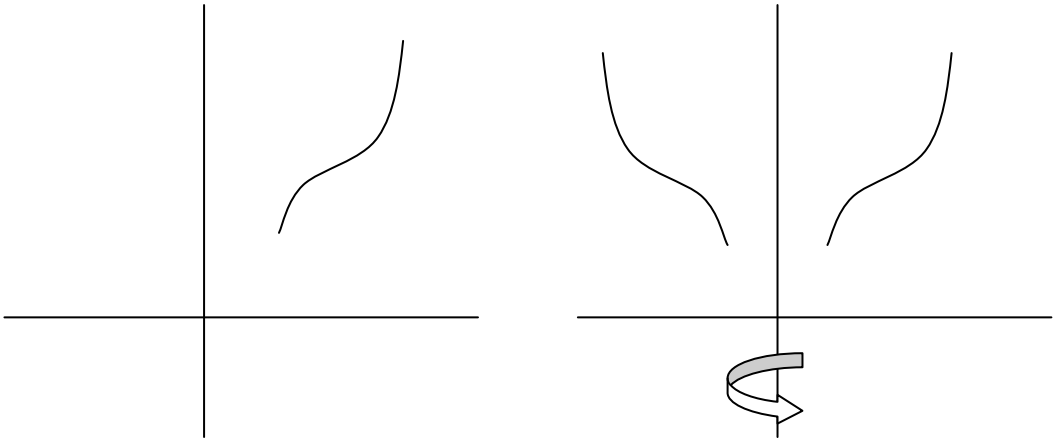
Section 7.4 – Areas of Surfaces of Revolutions

- revolve $f(x)$ about the x-axis :



Surface Area = $\int_a^b$ _____ _____

- revolve $f(x)$ about the y-axis:



Surface Area = $\int_c^d$ _____ _____

3. Find the surface area of the solid generated by revolving $y = x + 2$ about the x-axis in the interval $[0,3]$.

4. Find the surface area of the solid generated by revolving $x = \frac{1}{3} y^{\frac{3}{2}} - y^{\frac{1}{2}}$ about the y-axis in the interval $y \in [0,3]$.