1. Find the arc length . . . .

(a)

$$x = \frac{y^4}{8} + \frac{1}{4y^2}, 1 \leq y \leq 2$$

(b)

$$y = \ln(\sec x), 0 \leq x \leq \frac{\pi}{4}$$

2. Find the surface area of the revolution . . . .
(a)

$$y = \sin \pi x, 0 \leq x \leq 1, \text{ rotate about the } x - \text{axis}$$

(b)

$$y = 1 - x^2, 0 \leq x \leq 1, \text{ rotate about the } y - \text{axis}$$

3. Find the center of mass of the lamina in the first quadrant enclosed by the curves $y = \sqrt[3]{x}$ and $y = x^3$.