

Review Problems Exam 1

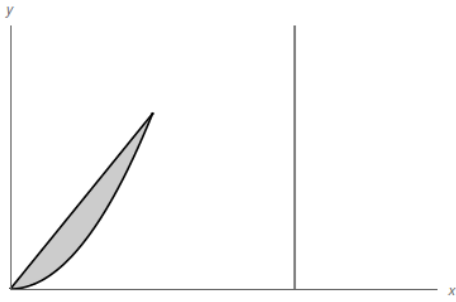
1.) Evaluate

$$\int_1^7 \frac{(\ln x)^3}{x} dx.$$

2.) Evaluate

$$\int \frac{\cosh(\sqrt{x})}{\sqrt{x}} dx.$$

3.) Consider the solid obtained by rotating the region enclosed by $y = x$ and $y = x^2$ about the line $x = 2$.



a) Set up (but do not evaluate) an integral that will compute the volume of this solid *by the method of cylindrical shells*.

b) Set up (but do not evaluate) an integral that will compute the volume of this solid *by the method of washers*.

4.) Find the arc length of the curve

$$y = \frac{1}{3} (x^{3/2} - 3\sqrt{x}) \text{ in the range } 1 \leq x \leq 9.$$

5.) Set up, *but do not evaluate*, an integral for the surface area obtained by rotating $y = \cos^2(x)$ in the range $0 \leq x \leq \pi/2$ about the x -axis.

6.) Find the volume of the solid obtained by rotating the region enclosed by $y = x^2(2 - x)$ and $y = 0$ in the range $0 \leq x \leq 2$ about the y -axis.

