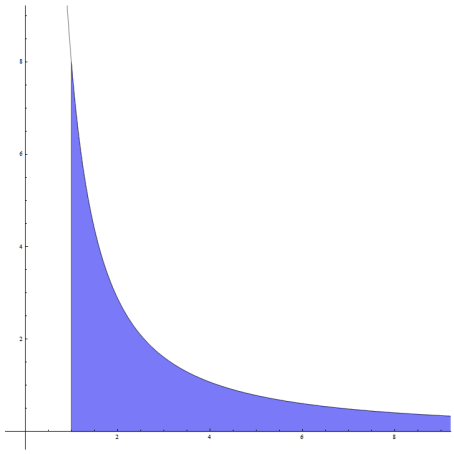
QUIZ 10 - MATH 112 Friday, April 29

YOUR NAME:_____ George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [5 points] In this problem, we want to compute the area shaded in the following figure. Please, read carefully and perform only the steps directed.



(a) Compute $\int \left(\frac{6}{\sqrt[3]{x^4}} + \frac{2}{x^2} \right) dx$ and write your answer without negative exponents.

(b) Based on Part (a), calculate $\int_1^b \left(\frac{6}{\sqrt[3]{x^4}} + \frac{2}{x^2} \right) dx$.

(c) Based on Part (b), compute $\int_1^\infty \left(\frac{6}{\sqrt[3]{x^4}} + \frac{2}{x^2} \right) dx$.

2. [5 points] Find the particular solution of the initial value problem

$$y' = \frac{y}{x^3}, \qquad y\left(\frac{1}{2}\right) = 7e^{-2}, \quad y > 0.$$