Group Exam 3

Name: _____

Math 142

Name of group member: _____

Professor Johnson

Name of group member: _____

Problem 1: (a) Find the limit of the sequence, if it converges.

$$a_n = \left(1 - \frac{2}{n}\right)^n$$

(b) Evaluate the integral. $$\int \frac{1}{u^2(u^2-1)}\, du$$

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Problem 2: (a) Calculate the *area* under the curve $y = \frac{1}{x^{0.8}}$ for $x \geq 1$.

(b) Calculate the *volume* of the solid obtained by taking the region below $y = \frac{1}{x^{0.8}}$ and above $y = 0$ for $x \geq 1$, and rotating it about the x-axis.

(c) Write 1-2 sentences comparing your findings in part (a) with those of part (b).

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Problem 3: Find the arc length of the curve $y = \ln(x)$ from $x = 1$ to $x = 4$.
Hint: Try to avoid trig substitution.

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