

Group Exam 3

Calculus II
Professor Johnson
Fall 2006

Name: _____
Name of group member: _____
Name of group member: _____

Problem 1:

(a) Compute the derivatives of the functions below.

$$\frac{d}{dx} \left((\sin x)^{\frac{\pi}{3}} \right) =$$

$$\frac{d}{dx} \left((\sin \frac{\pi}{3})^x \right) =$$

$$\frac{d}{dx} \left(\left(\frac{\pi}{3} \right)^{\sin(x)} \right) =$$

(b) Evaluate the integral.

$$\int_e^5 \frac{1}{x \ln(x)} dx$$

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Problem 2:

Find the volume of the solid obtained by rotating the region bounded by

$y = \frac{1}{x^2 + 1}$, $x = 0$, $x = 4$, and $y = 0$ about the y -axis.

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Problem 3:

(a) Evaluate the integral.

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} 2^{\sin(x)} \cos(x) dx$$

(b) Solve for x .

$$\ln(e^x - 2) = 5$$