

Homework questions for section 8.8, 9.1, 9.2

Math 104, Fall 2007

Credit is given only if supporting work is shown. Only correct answers receive credit. No partial credit is given.

1. Determine whether the integral converges, and if it does, find its value

$$\int_0^{\infty} \frac{1}{x^2 + 3x + 2} dx.$$

- A) 1 B) $\ln 2$ C) 2 D) $1 + \ln 3$ E) 3 F) The integral diverges

2. Find the arc length of the graph of

$$x^{2/3} + y^{2/3} = 1,$$

for the part of the curve that falls in the first quadrant ($x \geq 0, y \geq 0$).

- A) $\frac{3}{2}\pi$ B) $\frac{4}{3}\pi$ C) $\frac{4}{5}\pi$ D) $\frac{3}{2}$ E) $\frac{4}{3}$ F) $\frac{4}{5}$

3. Find the area of the surface generated by rotating the graph of

$$y = x^2 + 1, \quad 0 \leq x \leq \sqrt{2}$$

about the y -axis.

A.) $3\pi/4$

B.) $4\pi/5$

C.) $\pi/3$

D.) $13\pi/3$

E.) $15\pi/4$

F.) $\frac{\pi}{3} (2\sqrt{2} - 1)$