

Multiple choice problems for sections 9.1, 9.2, 9.5

Math 104, Spring 2007

Credit is given only if you choose the correct answer *and* show supporting work.

1. Find the arc length of the curve given by

$$y = e^{x/2} + 2e^{-x/4}, \quad 4 \leq x \leq 8.$$

- A.) $2e^4 + 4e^2 + 2e^{-1} + 4e^{-2}$
- B.) $2e^4 - 4e^2 + 2e^{-1} - 4e^{-2}$
- C.) $e^4 + 2e^2 + e^{-1} + 2e^{-2}$
- D.) $e^4 - 2e^2 + e^{-1} - 2e^{-2}$
- E.) $e^4 + e^2 + 2e^{-1} + 2e^{-2}$
- F.) $e^4 - e^2 + 2e^{-1} - 2e^{-2}$

2. Find the area of the surface obtained by rotating the curve

$$y = x^3, 0 \leq x \leq 1$$

around the y -axis.

- A.) $\frac{3}{2}\pi$ B.) $\frac{10}{3}\pi$ C.) $\frac{14}{9}\pi$ D.) $\frac{9}{5}\pi$ E.) $\frac{40}{27}\pi$ F.) $\frac{27}{14}\pi$

3. The time t in years before a particular type of machinery will break down is a random variable with probability density function

$$f(t) = \frac{2}{\pi(t^2 + 1)}, t \geq 0.$$

Find the probability that this machine will last for more than one year.

- A.) 0% B.) 20% C.) 40% D.) 50% E.) 60% F.) 80%