

## MAC 2312 Calculus II, Worksheet #8

Date: \_\_\_\_\_

Name: \_\_\_\_\_

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- Q1) Find the length of the curve  $y^2 = 4(x + 4)^3$ ,  $0 \leq x \leq 2$ ,  $y > 0$ .
- Q2) Find the length of the curve  $y = \ln(\cos x)$ ,  $0 \leq x \leq \frac{\pi}{3}$ .
- Q3) Find the length of the curve  $x = \frac{1}{3}\sqrt{y}(y - 3)$ ,  $1 \leq y \leq 9$ .
- Q4) Use Simpson's Rule with  $n = 10$  to estimate the arc length of the curve  $y = x \sin x$ ,  $0 \leq x \leq 2\pi$ .
- Q5) Find the exact area of the surface obtained by rotating the curve  $y = \sqrt{1 + 4x}$ ,  $1 \leq x \leq 5$  about the  $x$ -axis.
- Q6) Find the exact area of the surface obtained by rotating the curve  $y = \frac{x^3}{6} + \frac{1}{2x}$ ,  $\frac{1}{2} \leq x \leq 1$  about the  $x$ -axis.
- Q7) Find the exact area of the surface obtained by rotating the curve  $y = \frac{x^2}{4} - \frac{1}{2} \ln x$ ,  $1 \leq x \leq 2$  about the  $y$ -axis.
- Q8) If the infinite curve  $y = e^{-x}$ ,  $x \geq 0$  is rotated about the  $x$ -axis, find the surface area of the resulting surface.