READING ASSIGNMENT 09

§9.1 (Arc Length and Surface Area)

NAME: SOLUTIONS

Due 17 July 2018

LEARNING OBJECTIVES

By the end of this lesson, you will be able to:

- Compute arc length of curves
- Compute surface area of volumes of revolution

REVIEW

- None.

READING

- Read section 9.1, but skip example 2 and example 3.

QUESTIONS

(1) What is the formula for the arc length of a curve $f(x)$ over the interval $[a, b]$?

ANSWER:

$$\int_a^b \sqrt{1 + f'(x)^2}\, dx$$

(2) Let S be the solid obtained by rotating the graph of $f(x)$ over the interval $[a, b]$ around the x-axis. What is the formula for the surface area of S?

ANSWER:

$$2\pi \int_a^b f(x)\sqrt{1 + f'(x)^2}\, dx$$