

7. Homework

Show all your work!

Justify your answers!

Read Sec. 8.1., 8.2, 10.1, 10.2.

Work the problems

Sec. 8.1. #'s: 16, 32;

Sec. 8.2. #'s: 8, 28;

Sec. 10.1 #'s 16, 24;;

Sec. 10.2 #'s 8, 27;;

and the additional problems:

- 1) Find the arc length functions of the graph given by $f: [0, \infty)$ with

$$f(x) = \int_0^x \sqrt{\cos^2(x) - 4 \cos x + 3}.$$

- 2) Find the area of the the rotational surface which is obtained when the the branch of the hyperbola given by

$$y^2 - x^2 = 1, \text{ for } x \in [1, 2]$$

is rotated about the x -axis.

- 3) Find the Arc length of the graph of the function given by $f = \ln(x + \sqrt{x^2 - 1}): [0, \infty)$ for $x \in [1, 2]$

- 4) Find the area of the the rotational surface which is obtained when graph of

$$f(x) = \frac{1}{x}, \text{ for } x \in [1, b]$$

is rotated about the x -axis.

- 5) Sketch the parametric curve C given by

$$x(t) = t^3 - 4t, y(t) = t^2 - 1, \text{ for } t \text{ in } (-\infty, \infty).$$

For five different values of t specify the corresponding point on the curve.

Determine the intervals for t for which the corresponding part of the curve is concave up.