

# CS110: Computer Programming Lab

## Department of CSE

### IIT, Guwahati

#### Module 02 Stage 03 Exercise 07

##### Problem description

We need to find the area under the curve in domain subset  $[4, 5]$

$$X^4 - 17.02 X^3 + 98.8601 X^2 - 220.7408 X + 137.9007$$

(This information is only for the curious and is not relevant to write the program. The roots of the equation are: 1, 3.71, 5.31, and 7).

This is done by dividing the area in question by narrow vertical strips of width  $w$  and heights given by the average value of the function at the two end points of the strip. The sum of these areas is the area under the curve.

How do we know that it is accurate? Repeat the exercise with width  $w/2$ . If the two areas are matching to the required precision of 4<sup>th</sup> digit after the decimal, we will print the result. If not the search for better estimate of the area is repeated with still narrower strip widths.