

# MATH 151 Homework 20

Due 4/5

Read Section 4.7.

Do Section 4.7 Exercises 5, 7, 9 (be sure to carry out all steps from page 278)

Also, do the following exercises.

- SF46.** Show that the function  $f(x) = \sqrt[3]{x}$  has an inflection point at  $(0, 0)$ . Anything interesting about this particular example?
- SF47.** Find the biggest possible number  $L$  and the smallest possible number  $U$  so that the function  $f(x) = \sin(x) + \cos(x)$  satisfies  $L \leq f(x) \leq U$  for all  $x$  in the closed interval  $[0, \pi/3]$ .
- SF48.** Archaeologists have discovered that early Americans made large cylindrical water containers from clay. They estimate that the clay to make each container (including top and bottom) was enough to make a total surface area of ten square meters. What is the largest volume the containers could have had?
- SF49.** What is the largest area a rectangle can have if it lies in the first quadrant, has one corner at the origin, and has another corner on the line  $y = 5 - 2x$ ?