

MATH 352: HOMEWORK 8
DUE TUESDAY APRIL 12

For the functionals below do the following:

- A. Define, rigorously, the function \mathcal{L} (as we did in class) that corresponds to the functional.
- B. Find the equation that a minimizer must satisfy.
- C. Determine the space that we need our “test functions” to be in.
- D. Determine the space we need the minimizer to be in to make sense out of the equation you found.

$$(1) F(u) = \int_0^b \frac{\sqrt{1+(u'(x))^2}}{\sqrt{u(x)}} dx$$

$$(2) F(u) = \int_a^b 2\pi u(x) \sqrt{1+(u'(x))^2} dx$$