

WEEK 9: JULY 7th - JULY 13th

0.1. Suggested Problems.

§7.1: #7, 11, 15, 19, 23, 37, 41, 49, 50 & 51

§7.2: #11, 13, 17, 19 & 23

§7.3: #7, 11, 15, 19, 25, 33, 39, 47, 59, & 61

§7.4: #7, 11, 15, 21, 27, 31, 35, 41, 54, 59, & 72

§7.5: #21, 25, 31, 45, 51, 53, 62, & 64

§7.6: #6, 8, 14, 33, 34 & 35

§7.7: #15, 21, 31, 35, 43, 47, 65, 68 & 71

§8.2: #7, 11, 19, 25, 33, 37, 45, 52 & 78

§8.3: #7, 11, 15, 23, 29, 37, 45, 51 & 53.

0.2. Assigned Problems. Due July 14th, in lecture.

- (1) Let n be a positive integer greater than 2. Draw relevant figures.

- (a) Find the greatest integer k for which

$$\frac{1}{2} + \frac{1}{3} + \cdots + \frac{1}{k} < \ln n.$$

- (b) Find the least integer k for which

$$1 + \frac{1}{2} + \frac{1}{3} + \cdots + \frac{1}{k} > \ln n.$$

(This is 7.2.24-25)

- (2) Let g be a function everywhere continuous and not identically zero. Show that if $f'(t) = g(t)f(t)$ for all $t \in \mathbb{R}$, then either f is identically zero or f does not take on the value zero. (This is 7.6.38)

- (3) Show that if f and g have continuous second derivatives and $f(a) = g(a) = f(b) = g(b) = 0$, then

$$\int_a^b f(x)g''(x)dx = \int_a^b f''(x)g(x)dx.$$

(This is 8.2.77)