

## Brief solutions to selected problems in homework week 11

### 1. Section 5.1, problem 22:

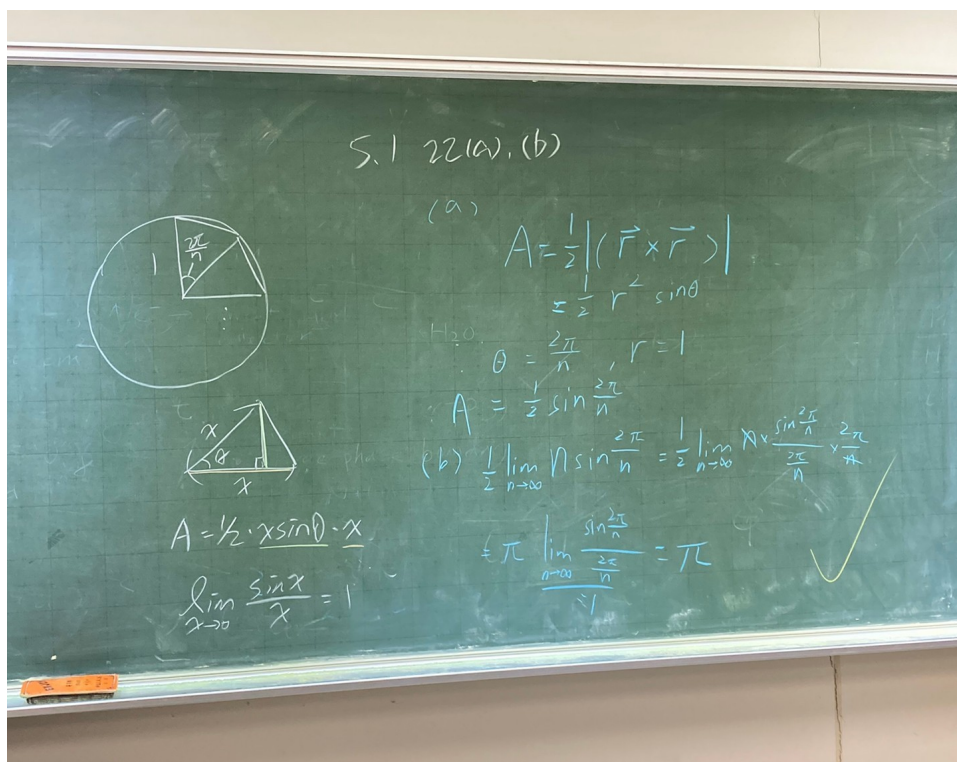


Figure 1: Section 5.1, problem 22(a,b)

5.1 22(c)

$$\text{Area } \Delta = \frac{r^2}{2} \sin\left(\frac{2\pi}{n}\right)$$

$$\lim_{n \rightarrow \infty} \frac{r^2 n}{2} \sin\left(\frac{2\pi}{n}\right)$$

$$= \lim_{n \rightarrow \infty} \frac{\sin\left(\frac{2\pi}{n}\right)}{\frac{2}{nr^2}}$$

$$\stackrel{\text{L'H}}{=} \lim_{n \rightarrow \infty} \frac{-\frac{2\pi}{n^2} \cos\left(\frac{2\pi}{n}\right)}{\frac{-2}{n^2 r^2}} = \lim_{n \rightarrow \infty} \pi r^2 \cos\left(\frac{2\pi}{n}\right)$$

$$= \pi r^2 \quad \checkmark$$

Figure 2: Section 5.1, problem 22(c)

2. Section 5.3, problem 87 (optional):

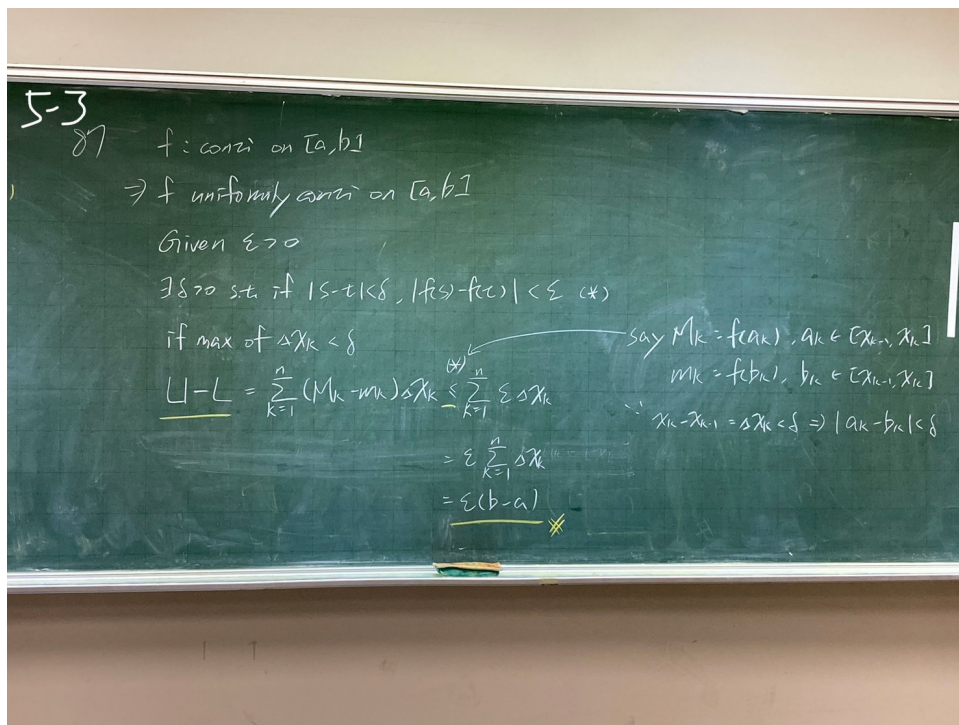


Figure 3: Section 5.3, problem 87