

Brief solutions to selected problems in homework 10

1. Section 15.4: Solutions, common mistakes and corrections:

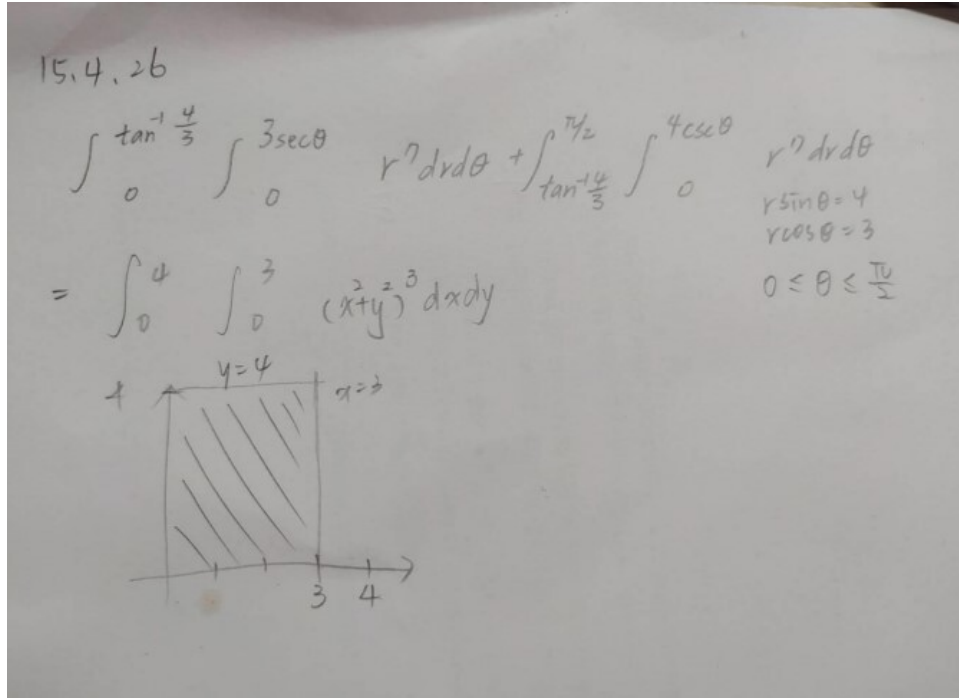


Figure 1: Section 15.4, problem 26

42.

$$\int_0^{\infty} \int_0^{\infty} \frac{1}{(4x^2 + y^2)^2} dx dy$$

$$= \int_0^{\pi/2} \int_0^{\infty} \frac{r}{(4r^2)^2} dr d\theta$$

$$= \int_0^{\pi/2} \lim_{b \rightarrow \infty} \left[-\frac{1}{2} (4r^2)^{-1} \right]_0^b d\theta$$

$$= -\frac{1}{2} \int_0^{\pi/2} \lim_{b \rightarrow \infty} \left(\frac{1}{4b^2} - 1 \right) d\theta$$

$$= -\frac{1}{2} \int_0^{\pi/2} (-1) d\theta$$

$$= \frac{\pi}{4} \#$$

Figure 2: Section 15.4, problem 42