INTEGRATION QUESTIONS (Priscah, Shivani, Ji Yun)

① Show that $[-2, 9]$ does not have a measure 0.

② Let $f: [0,1] \times [0,1] \to \mathbb{R}$ be defined by

$$f(x,y) = \begin{cases} 0 & \text{if } 0 \le x < 1 \\ 1 & \text{if } 1 \le x < 2 \end{cases}$$

Show that f is integrable and find $\int_{[0,1]\times[0,1]} f$.

③. Show that if $f, g: A \to R$ are integrable, so is f.

④. Evaluate the iterated integral.

$$\int_0^1 \int_0^2 \int_0^{x+z} 6xz \, dy \, dx \, dz.$$