Exercise 7

Question 1

a) We have one table, i.e. a stimulus, and two types of workers of different thresholds θ_1 and θ_2

Model and explain $T_\theta(s)$

Model 1 : biological model

$$T_\theta(s) = 1 - e^{-s/\theta}$$ hard work with analytically

Model 2 : Approximation

$$T_\theta(s) = \frac{s^n}{s^n + \theta^n}$$

where s is stimuli, θ is threshold
n is steepness of threshold

$s \ll 0$ low probability of doing task

$s \gg 0$ high —— 1. ——

$s \approx 0$ ≈ 50/50

$\Rightarrow$ $n \approx 2$ gives max eff possible to solve analytically.

b) and c) * when $\alpha \geq \delta$ the efficiency of doing task get less and less for both workers, meaning that both type of workers have to devote more workers into task in order to keep stimuli low.

* when $\alpha >> \delta$ the efficiency of doing task is high. Most of the work is done by workers of type 2, and when sufficiently high only a small fraction of the total population needs to participate in task