Statistical Methods, Exercise 8

Problem 1

a) Type I (false positive): 1%
Type II (false negative): 40%

b) Hypothesis (H): no infection
Event (E): positive test
p: fraction of all infected people ($\hat{=}$ probability to be infected)

$\rightsquigarrow$ Bayes: $$P(H|E) = \frac{P(E|H)\,P(H)}{P(E)}$$

where $P(H) = 1-p$, $P(E|H) = 0{,}01$ and $P(E) = p \cdot 0{,}6 + (1-p) \cdot 0{,}01$.