

Q1)

a) Population mean = 72bpm
Sample mean = 69bpm.

b) H_0 : The new relaxation app does not reduce the average resting rate of regular users.

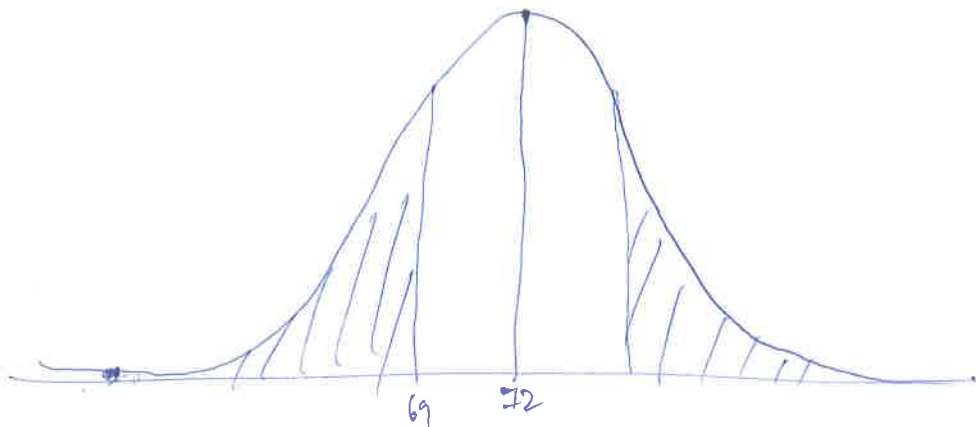
H_1 : The new relaxation app reduces the average resting rate of regular users.

c) $\frac{x - \mu}{\sqrt{n}} \Rightarrow \frac{69 - 72}{\sqrt{64}} \Rightarrow \frac{-3}{8}$ = standard error.

\Rightarrow The no. of errors from the baseline to the mean.

d) z-score = $\frac{\sigma}{se} \Rightarrow \frac{3}{-3/8}$
 $\Rightarrow \frac{24}{3} \Rightarrow -8$

e)



Q2)

a) $P(B|A) \cdot P(A)$
 $= 20\%$

b) $P(A|B)$
If the message is not spam, the filter still marks it as "spam" with probability 0.05.

c) $P(B) = P(B|A) \cdot P(A) + P(B|\neg A) \cdot P(\neg A)$
 $= 0.95 \times 0.2 + 0.05 \times 0.1$

d) Posterior ^{or} probability is higher.