I pledge to follow the Rules on Academic Honesty and understand that violations may lead to severe penalties. (Signature) ____________________

6) $$L(x) = \frac{P(x; H_1)}{P(x; H_0)} = \frac{e^{-\frac{1}{2\sigma^2}(x_n - A)^2}}{e^{-\frac{1}{2\sigma^2}(x_n)}} = e^{-\frac{1}{2\sigma^2}(-2x_n + A^2)} > \gamma_{NP}$$

Then

$$-\frac{1}{2\sigma^2}\left[\sum_{n=1}^{2}(x_n - A)^2 - \sum_{n=1}^{2} x_n^2\right] > \ln(\gamma_{NP})$$

$$\Rightarrow \frac{1}{2}[x_1 + x_2] > \frac{A}{2} + \frac{\sigma^2}{2A}\gamma_{NP} = \gamma$$

$\therefore$ The optimal decision for us would be that We should use the sample mean