5.1.2.

Repeat previous problem for slotted Aloha

For slotted aloha: success $\Leftrightarrow$ no other transmissions in T_{tx} time frame:

$P(\text{success}) = P(k=0) = e^{-G}$

Efficiency $S = G \cdot e^{-G}$

Maximize S: $\frac{dS}{dG} = e^{-G} - Ge^{-G} = 0 \Leftrightarrow G = 1$

$\frac{d^2S}{dG^2} = \dots \Rightarrow$ maximum

$G = \lambda T_{tx} \Rightarrow \lambda = \frac{G}{T_{tx}} = \frac{1}{1\mu s} = 10^6 \frac{tx}{s}$

$\lambda_{stat} = \frac{\lambda}{n} = \frac{10^6 \frac{tx}{s}}{100 \text{ stat}} = 10000 \frac{tx/s}{\text{station}}$