The exponential distribution is a family of probability distributions given by

$$P(t;\lambda) = \lambda e^{-\lambda t}$$

where $t \geq 0$ is a random variable and λ is a parameter.

(a) What is $\langle t \rangle$?

(b) What is $Var(t)$?

(c) Given independent samples from an exponential distribution $t_1, t_2, \ldots, t_n$, what is the maximum likelihood estimate of λ?