Quiz 3 - Process vs. Observation Error

My name is: _____

1. If you have a time-series of population counts to which you'd like to fit a geometric growth model, and the primary source of variation from the expected growth rate in any given year is observer error, then you can fit a regression of:

   (a) $log\left(N_t/N_{t+1}\right)$ vs. N

   (b) N_t vs. λ

   (c) It is impossible to estimate the growth rate with observer error.

   (d) $log(N_t)$ vs. time

   (e) λ vs. $log(N_t)$

2. If you have a data set of annual growth estimates for a population where there is substantial process error, then a good estimate for the variance due to process error would be?

   (a) Residual variance from a model fit of $log(N_{t+1}/N_t)$ vs. N_t

   (b) The standard deviation of N_t

   (c) The standard deviation of $N_{t+1} - N_t$

   (d) Residual variance from a model fit of $log(N_t)$ vs. time

   (e) $\frac{1}{T}\sum_{t=1}^{T}\left(N_{t+1} - N_t\right)$