# Econometrics I, quiz 10 

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1. This is a 30 -minute quiz
2. At NO point in the exam can you discuss the questions/answers with any of your colleagues.
3. When a multiple choice is present, circle the number indicating your choice of the answer.
4. Good luck. :-)

- Q1 : You have a dataset of ( $y=$ income, $x=e d u c a t i o n)$ pairs where $N=20$. We have the following values calculated for the dataset:

| Statistic | Value | Statistic | Value |
| :--- | ---: | :--- | ---: |
| $\bar{y}$ | 31.278 | $\bar{x}$ | 14.600 |
| $\sigma_{Y}$ | 22.376 | $\sigma_{x}$ | 3.119 |
| $\operatorname{cov}_{(y, x)}$ | 23.597 | $\mathrm{r}_{(y, x)}$ | 0.338 |

The data has been generated by a model of the form:

$$
f\left(y_{i}, x_{i}, \beta\right)=\frac{1}{\beta+x_{i}} e^{-\frac{y_{i}}{\left(\beta+x_{i}\right)}}
$$

1. What is the log likelihood for this problem? (2 points)
2. What is a likely null hypothesis for this problem? (2 points)
3. What is the MLE estimate for the model parameters? (Need an equation and a value) (2 points)
4. What is the asymptotic variance of the MLE estimate? (Need an equation and a value) (2 points)
5. What is the interpretation of the model parameter in terms of income and education? (2 points)
