1. **Problem**
   Using the data provided in `regression.csv` estimate a linear regression of `y` on `x1` and `x2`. Answer the following questions.

   (a) Proportion of variance explained (in percent):

   (b) F-statistic:

   (c) Characterize in your own words how the response `y` depends on the regressors `x1` and `x2`.

   (d) Upload the R script you used to analyze the data.

   Solution
   The presented results describe a semi-logarithmic regression.

```
Call:
lm(formula = log(y) ~ x1 + x2, data = d)

Residuals:
     Min       1Q   Median       3Q      Max
-2.68802 -0.67816 -0.01803  0.68866  2.35064

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -0.06802    0.13491  -0.504    0.616
x1           1.37863    0.13351  10.326 9.34e-15 ***
x2          -0.21449    0.13995  -1.533    0.131
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 1.052 on 58 degrees of freedom
Multiple R-squared:  0.6511,    Adjusted R-squared:  0.6391
F-statistic: 54.12 on 2 and 58 DF,  p-value: 5.472e-14
```

   The mean of the response `y` increases with increasing `x1`. If `x1` increases by 1 unit then a change of `y` by about 296.94 percent can be expected. Also, the effect of `x1` is significant at the 5 percent level.

   Variable `x2` has no significant influence on the response at 5 percent level.

   The R-squared is 0.6511 and thus 65.11 percent of the variance of the response is explained by the regression.

   The F-statistic is 54.12.

   (a) Proportion of variance explained: 65.11 percent.

   (b) F-statistic: 54.12.

   (c) Characterization: semi-logarithmic.

   (d) R code.