21 When implementing linear regression of some dependent variable y on the set of independent variables $\mathbf{x} = (x_1, \ldots, x_r)$, where r is the number of predictors, which of the following statements will be true?

a) $\beta_0, \beta_1, \ldots, \beta_r$ are the **regression coefficients**.

b) Linear regression is about determining the **best predicted weights** by using the **method of ordinary least squares**.

c) E is the random interval

d) **Both and b**

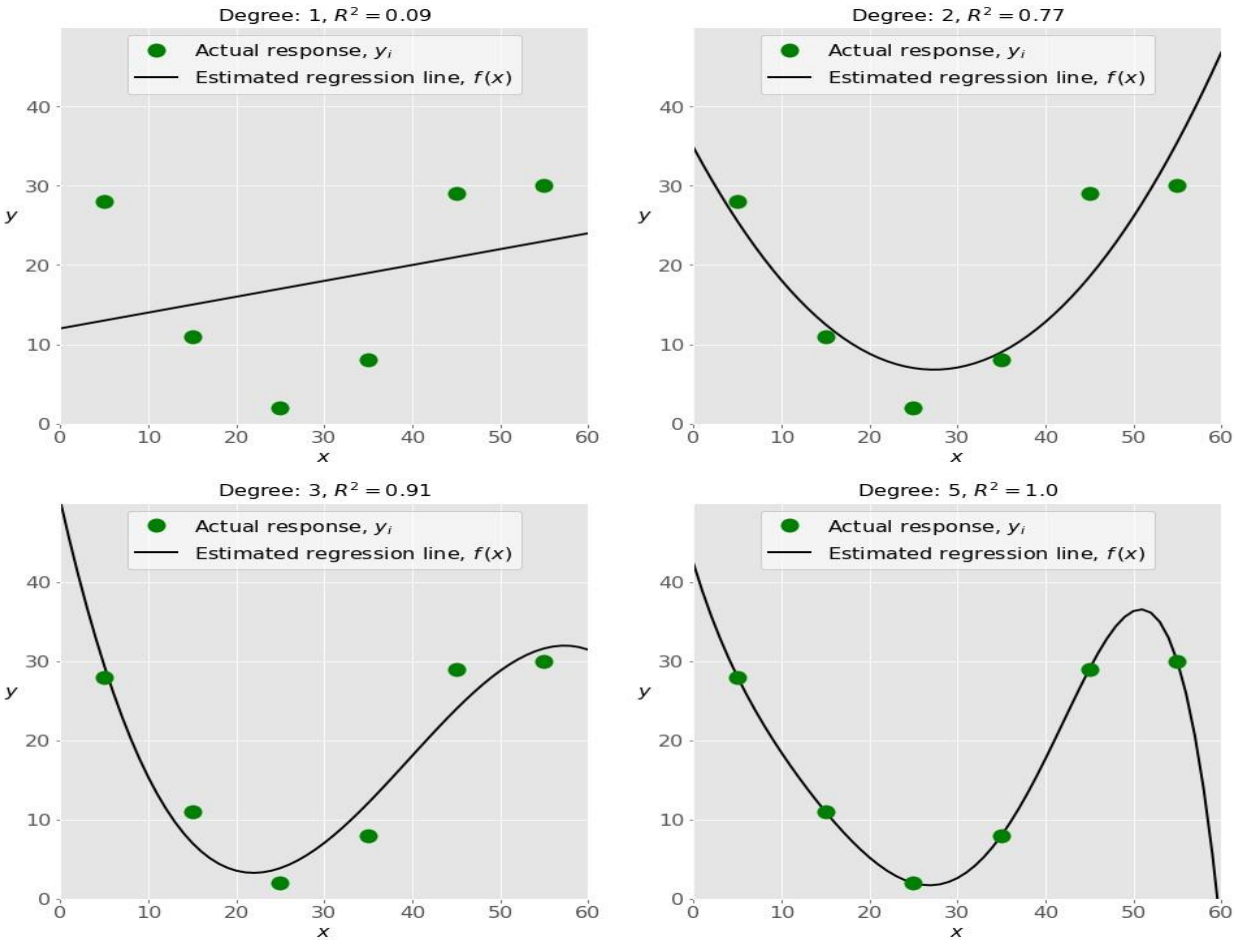
22) What indicates that you have a **perfect fit** in linear regression?

a) The value $R^2 < 1$, which corresponds to SSR = 0
b) The value $R^2 = 0$, which corresponds to SSR = 1
c) The value $R^2 > 0$, which corresponds to SSR = 1
d) **The value $R^2 = 1$, which corresponds to SSR = 0**

23) In simple linear regression, the value of **what** shows the point where the estimated regression line crosses the y axis?

a) Y
b) **B0**
c) B1
d) F

24) Check out these four linear regression plots:



Which one represents an **underfitted** model?

a)The bottom-left plot

b) The top-right plot

c) The bottom-right plot

d) **The top-left plot**

25) There are five basic steps when you're implementing linear regression:

- **a.** Check the results of model fitting to know whether the model is satisfactory.
- **b.** Provide data to work with, and eventually do appropriate transformations.
- **c.** Apply the model for predictions.
- **d.** Import the packages and classes that you need.
- **e.** Create a regression model and fit it with existing data.

However, those steps are currently listed in the wrong order. What's the correct order?

a) e, c, a, b, d
b) e, d, b, a, c
c) d, e, c, b, a
d) **d, b, e, a, c**

a Which of the following are optional parameters to LinearRegression in scikit-learn?

a) Fit
b) **fit_intercept**
c) **normalize**
d) **copy_X**
e) **n_jobs**
f) reshape

27) While working with scikit-learn, in which type of regression do you need to transform the array of inputs to include nonlinear terms such as x^2?

a) Multiple linear regression

b) Simple linear regression

c) **Polynomial regression**

28) You should choose statsmodels over scikit-learn when:

A) You want graphical representations of your data.

b) You're working with nonlinear terms.

c) **You need more detailed results.**

d) You need to include optional parameters.

29) _____ is a fundamental package for scientific computing with Python. It offers comprehensive mathematical functions, random number generators, linear algebra routines, Fourier transforms, and more. It provides a high-level syntax that makes it accessible and productive.

a) Pandas

b) **Numpy**

c) Statsmodel

d) scipy

30) _____ is a Python data visualization library based on Matplotlib. It provides a high-level interface for drawing attractive and informative statistical graphics that allow you to explore and understand your data. It integrates closely with pandas data structures.

a) Bokeh
b) **Seaborn**
c) Matplotlib
d) Dash