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Extra Problems

These extra questions are here to give you more practice if you feel you need it. No new concepts are introduced on this page. If you've "got it," go ahead and move on to the next page. If you'd like a little more practice, work through the questions below.

Question

1/1 point (graded)

Assume that you are given a scatterplot that has a regression line of $Y = 4.2 + (-2)X$. Which of the following is the correct interpretation of the slope?

- For each decrease of one unit in the explanatory variable (X), we expect the response variable (Y) to decrease by two units.
- For each increase of one unit in the explanatory variable (X), we expect the response variable (Y) to increase by two units.
- For each increase of one unit in the explanatory variable (X), we expect the response variable (Y) to change by $4.2 + (-2) = 2.2$ units.
- For each increase of one unit in the explanatory variable (X), we expect the response variable (Y) to decrease by two units. ✔

Answer

Correct:

The slope of this line is negative, since $b = -2$. This means that the two variables, X and Y, change inversely. In other words, if one increases, the other decreases, and vice versa. In particular, as X changes by one unit, Y will inversely change by 2 units.

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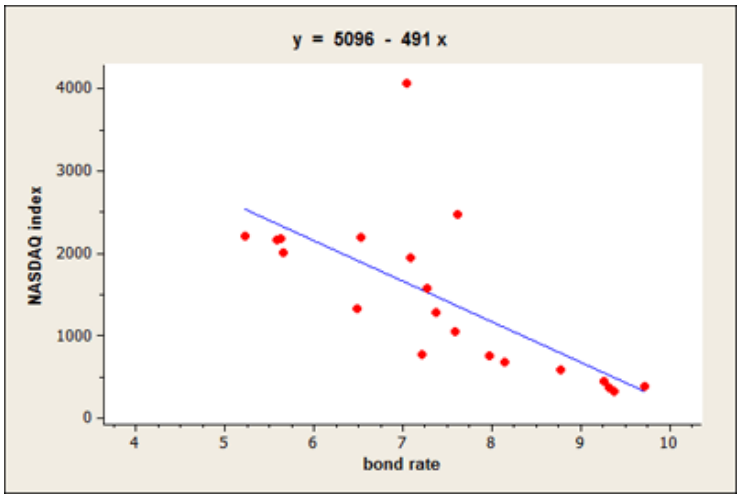
Question

1/1 point (graded)



In the above image, what is the slope of the regression line?

- 5,096
- 491
- −491 ✔
- 10.4
- −10.4

Answer
Correct:
The regression line equation has the form Y = intercept + (slope * X). In this example, Y = 5096 + (−491 * X), so the slope equals −491.

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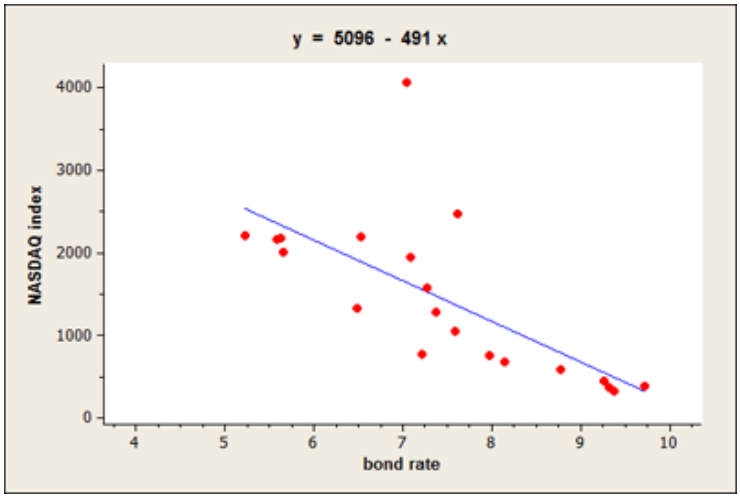
Question

1/1 point (graded)



For the above image, which of the following is the correct interpretation of the slope of the regression line?

- For each increase of one percentage point in the bond rate, the NASDAQ composite index is likely to change by 5096 + (−491) = 4605 points.
- **For each increase of one percentage point in the bond rate, the NASDAQ composite index is likely to decrease by 491 points. ✔**
- For each increase of one percentage point in the bond rate, the NASDAQ composite index is likely to increase by 491 points.
- For each decrease of one percentage point in the bond rate, the NASDAQ composite index is likely to decrease by 491 points.

Answer

Correct:

The explanatory variable is the bond rate. A negative slope of 491 means that for each 1-unit change in the explanatory variable, we would expect the response variable to change by 491 units. Since the slope is negative, the changes are in opposite directions. Thus, if the explanatory variable increases, the response variable decreases, and vice versa.

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