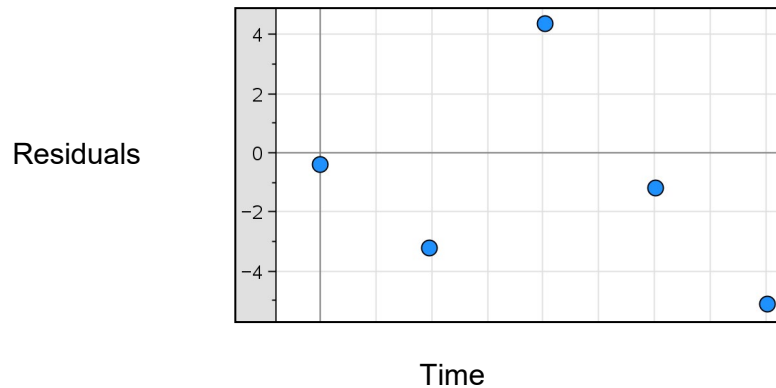


Practice Problem 1



A new comedian has joined social media. The number of followers since the comedian created a social media account is recorded. An exponential regression was used to develop a model for the number of followers over time. The figure shows a graph of the residuals of the exponential regression. Which of the following statements about the exponential model is true?

- (a) The residual plot has no apparent pattern, so the exponential model was appropriate.
- (b) The residual plot has no apparent pattern, so the exponential model was not appropriate.
- (c) The residual plot displays a pattern, so the exponential was appropriate.
- (d) The residual plot displays a pattern, so the exponential model was not appropriate.

Practice Problem 2

A regression model is constructed for a data set. One of the data points is (1, 8). The residual value corresponding to this data point is 0.5.

- (a) The predicted value when $x = 1$ is 8.5 and is an overestimate.
- (b) The predicted value when $x = 1$ is 8.5 and is an underestimate.
- (c) The predicted value when $x = 1$ is 7.5 and is an overestimate.
- (d) The predicted value when $x = 1$ is 7.5 and is an underestimate.

Practice Problem 1 Solution:

(a) The residual plot has no apparent pattern, so the exponential model was appropriate.

A model is justified as appropriate for a data set if the residuals of a regression, the residual plot, appear without pattern.

Practice Problem 2 Solution:

(d) The predicted value when $x = 1$ is 7.5 and is an underestimate.

The residual is the actual value – the predicted value. If the residual value is positive, the predicted value is an underestimate.

$0.5 = 8 - \text{predicted value}$; therefore, the predicted value is $8 - 0.5 = 7.5$

***Note: This activity has been developed independently by Texas Instruments. AP is a registered trademark of the College Board, which was not involved in the production of, and does not endorse, this product. Policies subject to change. [Visit www.collegeboard.org](http://www.collegeboard.org).*