Question 2

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Records at the Center for Disease Control show that the total number of flu cases in Spring, 2009 looked like this:

Date	Day	Flu Cases
April 27	0	73
April 28	1	105
April 29	2	137
April 30	3	257
May 1	4	367
May 2	5	658
May 3	6	898
May 4	7	1,085
May 5	8	1,490
May 6	9	1,893

An initial examination of the data showed that both an exponential and a logistic growth model fit the data well:

Exponential Model	Logistic Growth Model
a = 76.64	C = 3,273.31
b = 1.46	a = 43.59
R-squared = 0.984	b = 1.57
	R-squared = 0.996

Use the data from the TABLE of Models to answer the following questions.

problem

0/1 point (graded)

2a. Looking at the raw data, what is the rate of change in flu cases from April 30 to May 1? *(Report as a proportion rounded to 2 decimal places.)*

1.43

✖ **Answer:** .43

1.43

Submit You have used 1 of 1 attempt

Answers are displayed within the problem

problem

1/1 point (graded)

2b. What is the growth rate for the flu, according to the exponential model? *(Report as a proportion rounded to 2 decimal places.)*

.46 ✔

.46

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✔ Correct (1/1 point)

problem

1/1 point (graded)

2c. Predict the number of cases of flu on **Day 14** (when "Day" is equal to 14), using the exponential model. *(Round to a whole number, without a comma)*

15325 ✔

15325

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✔ Correct (1/1 point)

problem

1/1 point (graded)

2d. Using the logistic model, predict the total number of flu cases on **Day 14**. *(Round to a whole number, without a comma.)*

3034 ✔

$$3034$$

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✔ Correct (1/1 point)

problem

1/1 point (graded)

2e. The actual number of flu cases on Day 14 was 4,379. Find the residual of the exponential model prediction. *(Round to zero decimal places, without a comma.)*

-10946 ✔

$$-10946$$

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✔ Correct (1/1 point)

problem

1/1 point (graded)

2f. What is the residual of the logistic model prediction for Day 14? *(Round to a whole number, without a comma.)*

1345 ✔

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✔ Correct (1/1 point)

problem

5/5 points (graded)

Based on the residuals of both models, what conclusion would you reach? Fill in the missing blanks.

The better fit statistic of the logistic ✔ model suggests that the number of new flu cases will begin slowing down ✔ . Based on this model, we would expect the maximum number of flu cases in the 2009 season to be: 3,273 ✔ . However, neither model ✔ does a perfect job of predicting future cases by Day 14. We will need to observe how the data changes after day 9 ✔ to determine how the model needs to be adjusted.

Submit You have used 1 of 1 attempt

✔ Correct (5/5 points)