Name: _____ Grade: _____

Group Members Present:

_____ , _____ , & _____

1. Logistic functions can be written in the form $f(x) = \dfrac{L}{1 + Ae^{-Bx}}$.

   a. Which parameter is referred to as the upper limiting value of the logistic function? _____

   b. Which parameter indicates whether the logistic function is increasing or decreasing? _____

   c. What is true about the parameter identified in part b when f is increasing? _____

2. For each of the following logistic functions, state the end-behavior of the function as limits. write the equations of the two horizontal asymptotes, and identify the function as increasing or decreasing.

   a. $f(x) = \dfrac{26}{1 + 3e^{-0.15x}}$

   End behavior (state as limits): _____ , _____

   Equations of asymptotes: _____ , _____

   Because $B > 0$ $B < 0$, the logistic function f is increasing   decreasing .
   (circle one)   *(circle one)*

   b. $f(x) = \dfrac{10.5}{1 + 4e^{0.13x}} + 32$

   End behavior (state as limits): _____ , _____

   Equations of asymptotes: _____ , _____

   Because $B > 0$ $B < 0$, the logistic function f is increasing   decreasing .
   (circle one)   *(circle one)*

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3. The data shown in the table below give the cumulative total of polio cases diagnosed by the end of each month during 1949.

Month	Cumulative total of polio cases	Month	Cumulative total of polio cases
January	494	July	8489
February	759	August	23,377
March	1016	September	32,618
April	1215	October	38,153
May	1619	November	41,462
June	2964	December	42,375

    a. Find a logistic model for the data.

    b. Write the equations of the horizontal asymptotes for the model.

    c. Is extrapolation with this model beyond the end of the input interval reasonable? Explain.