Algebra 2   Horizontal Asymptotes Exploration   Fall 2013

Horizontal Asymptotes are the end behavior of some rational functions. They are the value that y approaches when bigger and bigger positive and negative values of x are substituted into the function. They are the the horizontal lines that some rational functions get closer and closer to as the graph moves farther and farther to the left and right.

→(THE EIGHT FUNCTIONS BELOW)

For each function do the following:

a) Enter the equation into Y_1

b) Using the table function note what happens to the value of Y for the following values of X.

X	Y
100	
1000	
100000	
−100	
−1000	
−100000	

c) State the equation of the horizontal asymptote, if any.

1. $y = \dfrac{x - 6}{x + 5}$ Horizontal Asymptote:

2. $y = \dfrac{3x + 1}{x + 4}$ Horizontal Asymptote:

3. $y = \dfrac{8x^2 + x - 6}{2x^2 - 21}$ Horizontal Asymptote:

4. $y = \dfrac{4x + 9x}{x^2 - 3}$ Horizontal Asymptote:

5. $y = \dfrac{x^2 - 13}{x^3 + 7}$ Horizontal Asymptote:

6. $y = \dfrac{x - 5}{2x^3 + 3}$ Horizontal Asymptote:

7. $y = \dfrac{5x^2 - 4}{x + 3}$ Horizontal Asymptote:

8. $y = \dfrac{-2x^3 + 5x - 8}{x^2 + 3x - 1}$ Horizontal Asymptote:

Without using a table or a graph how could you tell from the equation what the horizontal asymptote is or if it even has one?

Predict the Horizontal Asymptote for each of the rational functions below.

a. $y = \dfrac{10x + 7}{5x - 3}$ b. $y = \dfrac{6x^2 - 5}{2x + 3}$ c. $y = \dfrac{12x - 11}{3x^2 - 1}$

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