

Precalculus Unit 3: 3.1-3.3 Review
Rational Functions, Scatter Plots, and Regression Equations

Complete the following problem.

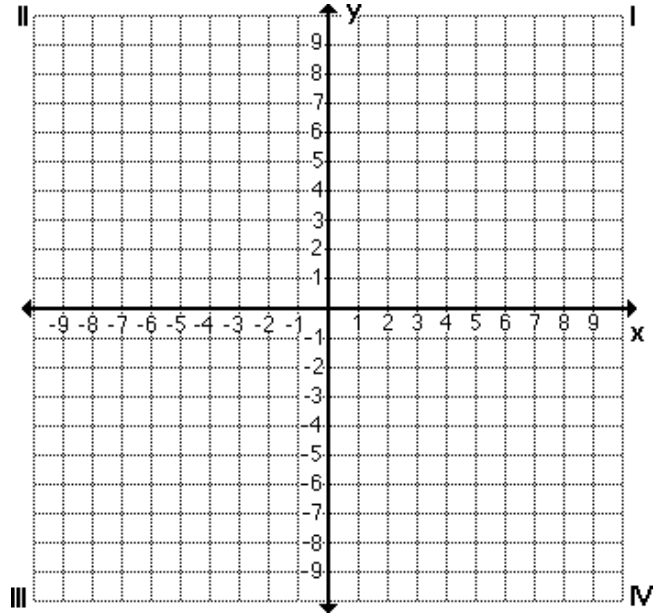
1. For the function $f(x) = \frac{x^2+x-12}{x^2-x-6}$

Domain:

Vertical Asymptote(s):

Hole:

Horizontal/Slant Asymptote:



How did you find the horizontal/slant asymptote?

x-intercept(s):

y-intercept:

Sketch the function on the provided graph. Make sure to accurately plot all of the features of the graph found above.

2. Find the slant asymptote for the function f given by $f(x) = \frac{2x^3+3x^2-8x+2}{x^2+4x-1}$.

3. An engineer collects the following data showing the speed s of a Ford Taurus and its average miles per gallon, M .

a. Draw a scatter plot of the data. Based on the scatter plot, what type of model does it look like you will use?

Speed, s	Miles per Gallon, M
30	18
35	20
40	23
40	25
45	25
50	28
55	30
60	29
65	26
65	25
70	25

b. Using your calculator/computer, find the model that best fits this data.

c. Use the function found in part b to determine the speed that maximizes miles per gallon. This can be done on the graph on the calculator.

d. Use the function found in part b to predict miles per gallon for a speed of 63 miles per hour.

e. Is the work in part d an example of interpolation or extrapolation?