Lesson 6: Graphing Rational Functions

Question #1

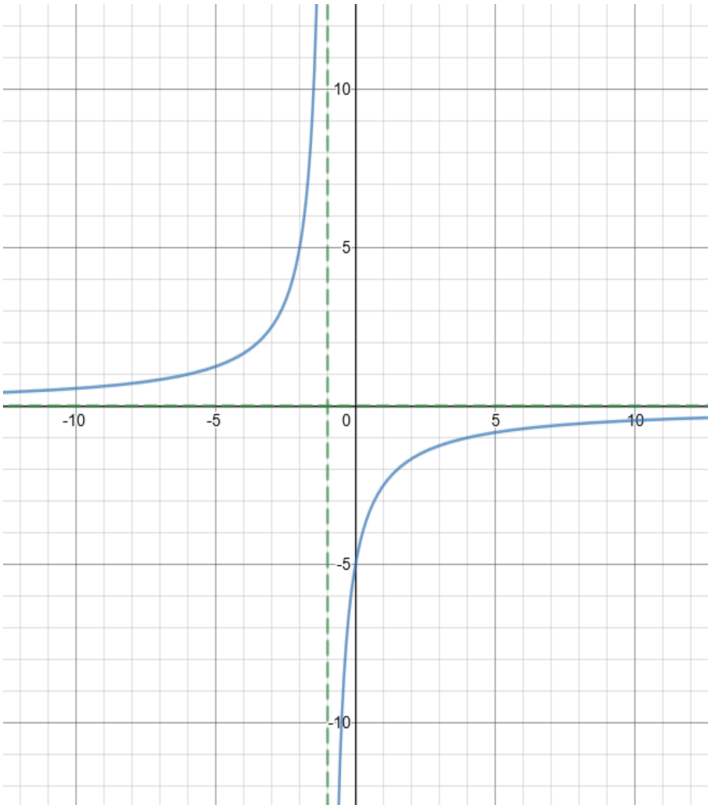
Reference Q.45596

Graph $\mathbf{y=}\frac{-1}{x+2}+3$ and state the Domain and Range.

Question #2

Reference Q.45599

Graph $\mathbf{y=}\frac{5}{-x-1}$ and state the Domain and Range.



Question #3

Reference Q.11791

Give the domain of the following rational function, and state whether each non-permissible value is an asymptote or a hole:

$$f(x)=\frac{(x-9)(x+2)}{(x+4)(x+2)(x-7)}$$

Question #4

Reference Q.11460

Give the domain of the following rational function, and state whether each non-permissible value is an asymptote or a hole:

$$f(x)=\frac{8x^2-18}{2x^2-13x+15}$$

Question #5

Reference Q.11793

Give the domain of the following rational function, and state whether each non-permissible value is an asymptote or a hole:

$$f(x)=\frac{(2x-9)(x-2)(x+1)}{x^2-3x-5}$$

Question #6

Reference Q.11900

Does the following function have a horizontal asymptote?

$$f(x)=\frac{(x-9)(x+2)}{(x+4)(x+2)(x-7)}$$

a. Explain why or why not.

b. State the horizontal asymptote if one exists.

Question #7

Reference Q.11899

Does the following function have a horizontal asymptote?

$$f(x)=\frac{8x^2-18}{2x^2-13x+15}$$

a. Explain why or why not.

b. State the horizontal asymptote if one exists.

Question #8

Reference Q.11898

Does the following function have a horizontal asymptote?

$$f(x)=\frac{(2x-9)(x-2)(x+1)}{x^2-3x-5}$$

a. Explain why or why not.

b. State the horizontal asymptote if one exists.

Question #9

Reference Q.11903

Determine all necessary information to sketch a graph of the following function:

$$f(x)=\frac{(x-9)(x+2)}{(x+4)(x+2)(x-7)}$$

Question #10

Reference Q.11902

Determine all of the necessary information needed in order to sketch a graph of the following function:

$$f(x) = \frac{8x^2 - 18}{2x^2 - 13x + 15}$$

Question #11

Reference Q.11901

Sketch a graph of the following function:

$$f(x) = \frac{(2x - 9)(x - 2)(x + 1)}{x^2 - 3x - 5}$$

Question #12

Reference Q.11908

What are the x and y intercepts of the following function?

$$f(x) = \frac{(x - 9)(x + 2)}{(x + 4)(x + 2)(x - 7)}$$

Question #13

Reference Q.11909

What are the x and y intercepts of the following function?

$$f(x) = \frac{8x^2 - 18}{2x^2 - 13x + 15}$$

Question #14

Reference Q.11910

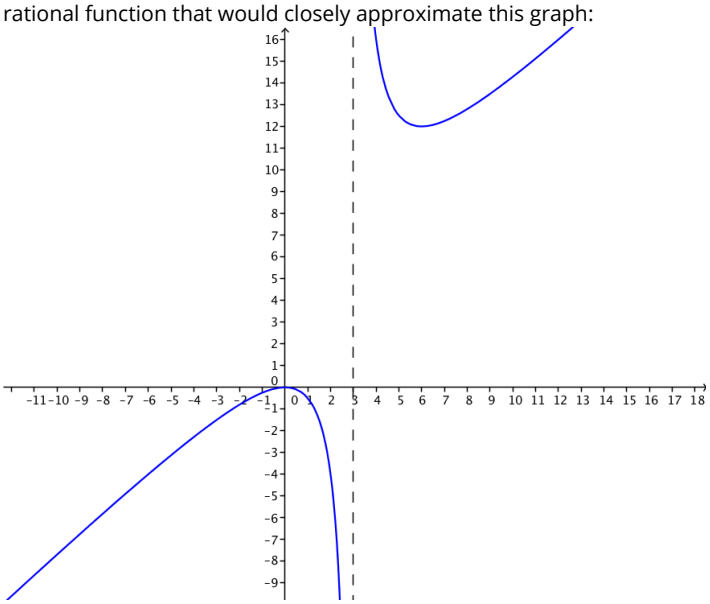
What are the x and y intercepts of the following function?

$$f(x) = \frac{(2x - 9)(x - 2)(x + 1)}{x^2 - 3x - 5}$$

Question #15

Reference Q.11905

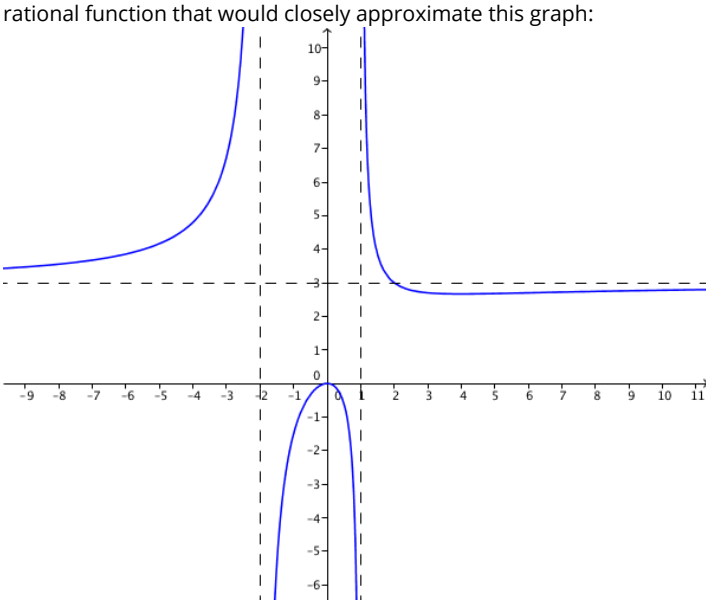
Given the following graph of a function, come up with a possible rational function that would closely approximate this graph:



Question #16

Reference Q.11904

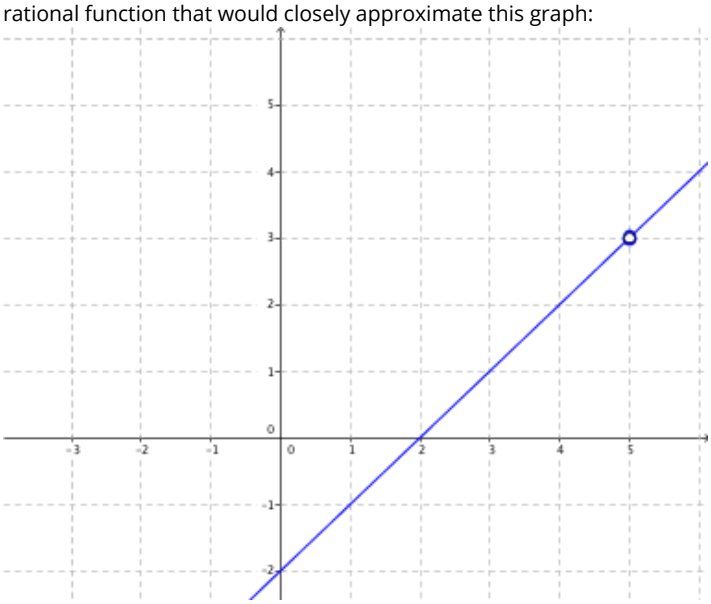
Given the following graph of a function, come up with a possible rational function that would closely approximate this graph:



Question #17

Reference Q.11906

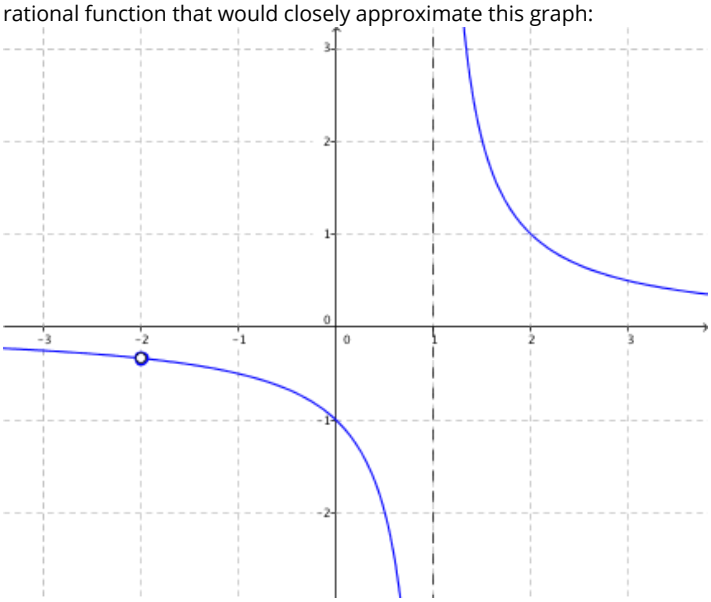
Given the following graph of a function, come up with a possible rational function that would closely approximate this graph:



Question #18

Reference Q.11907

Given the following graph of a function, come up with a possible rational function that would closely approximate this graph:



Question #19

Reference Q.11911

The riverboat HMS Theodore can travel at a top speed of 20km per hour. The river's current can be anywhere from 0-30km/h.
You are traveling in the HMS Theodore between port A and port B, which is 50km upstream from port A.

a. Write a function for the time it would take to get there "T" as a function of the speed of the current "c", assuming you are traveling at the Theodore's top speed.

b. Graph this function using technology such as www.desmos.com.

c. Explain what the asymptote represents, and why the graph looks like it does, especially near the asymptote.

Question #20

Reference Q.11912

[Interesting thought! The invention of the airplane in the beginnings of the 20th century has changed the world and cultures many times over. It's not just the ease of transporation - it's Industries, Global Trade, National Economics, even Wars... the impact has been beyond measure!] You are flying from Calgary to Orlando, a distance of 2309 miles in a Boeing 777 which has a top speed of 590 mph. You are traveling in a headwind the whole way.

a. Write a function for the time it would take to get there "T" as a function of the speed of the headwind "h", assuming you are traveling at the plane's top speed.

b. Graph this function using technology such as www.desmos.com.

c. Explain what the asymptote represents, and why the graph looks like it does, especially near the asymptote.