Rational Expressions/Function Operations Activity

Part A: Matching Rational Expressions

With a partner cut out all of the functions and the graphs and match them on the next page.

For all functions $a > 0$ $b > 0$

a. $f(x) = \dfrac{(x-a)(x-b)}{(x-b)}$

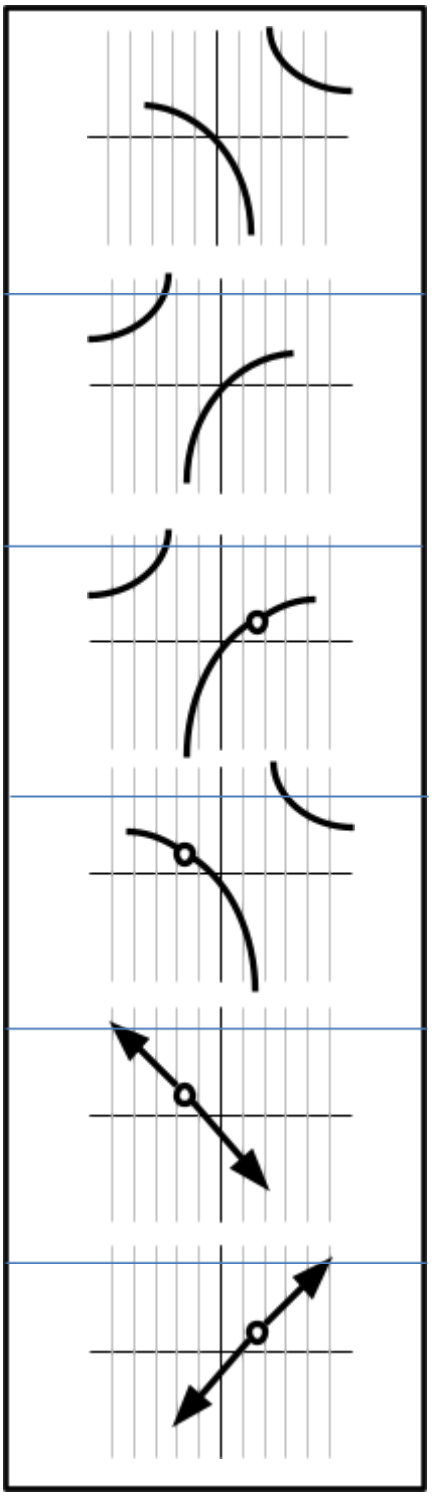
b. $f(x) = \dfrac{x-b}{(x+a)}$

c. $f(x) = \dfrac{(x+a)(x-b)}{(x+a)}$

d. $f(x) = \dfrac{x-b}{(x+a)(x-b)}$

e. $f(x) = \dfrac{x+a}{(x-b)}$

f. $f(x) = \dfrac{(x+a)}{(x+a)(x-b)}$



Function

Graph

Please explain and mathematically justify your choice.

Function

Graph

Please explain and mathematically justify your choice.

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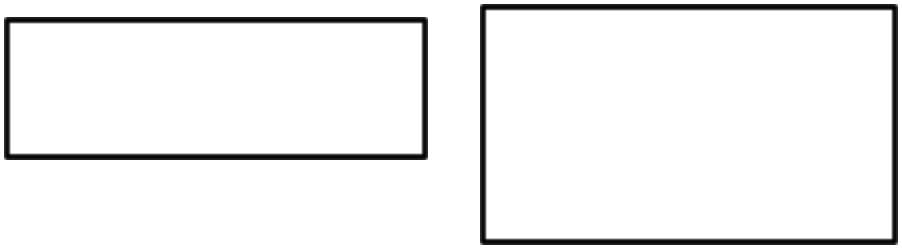
Function

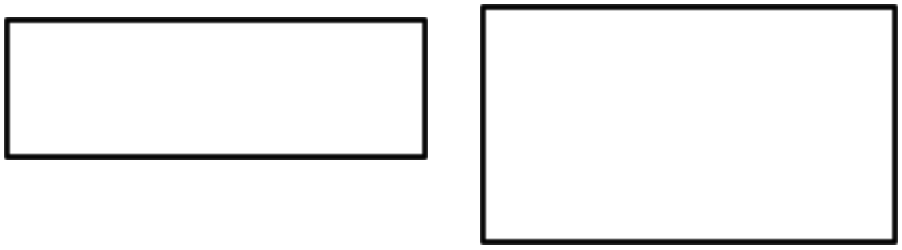
Graph



Please explain and mathematically justify your choice.

Function

Graph



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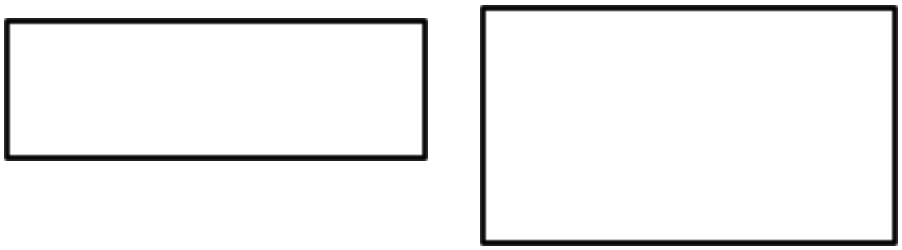
Function

Graph



Please explain and mathematically justify your choice.

Part B: Division of Functions

Given the functions:

a(x) = $2x + 6$ b(x) = $3x - 9$ c(x) = x^2 d(x) = $x^2 - 9$ e(x) = $x^2 - 3x$

State the quotient of 2 different functions that describe the following:

$\frac{f_1(3)}{f_2(3)} = undefined$

$\frac{f_1(0)}{f_2(0)} =$ indeterminant case

$y = \frac{f_1(x)}{f_2(x)}$ has a vertical asymptote at x = 0

$y = \frac{f_1(x)}{f_2(x)}$ has a point of discontinuity at x = 3

$y = \frac{f_1(x)}{f_2(x)}$ has two vertical asymptotes

$y = \frac{f_1(x)}{f_2(x)}$ has a domain $x \neq \pm 3$