

3.3 Quotient of Linear Functions Lesson

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Part 1: Key Features of the Quotient of Linear Functions

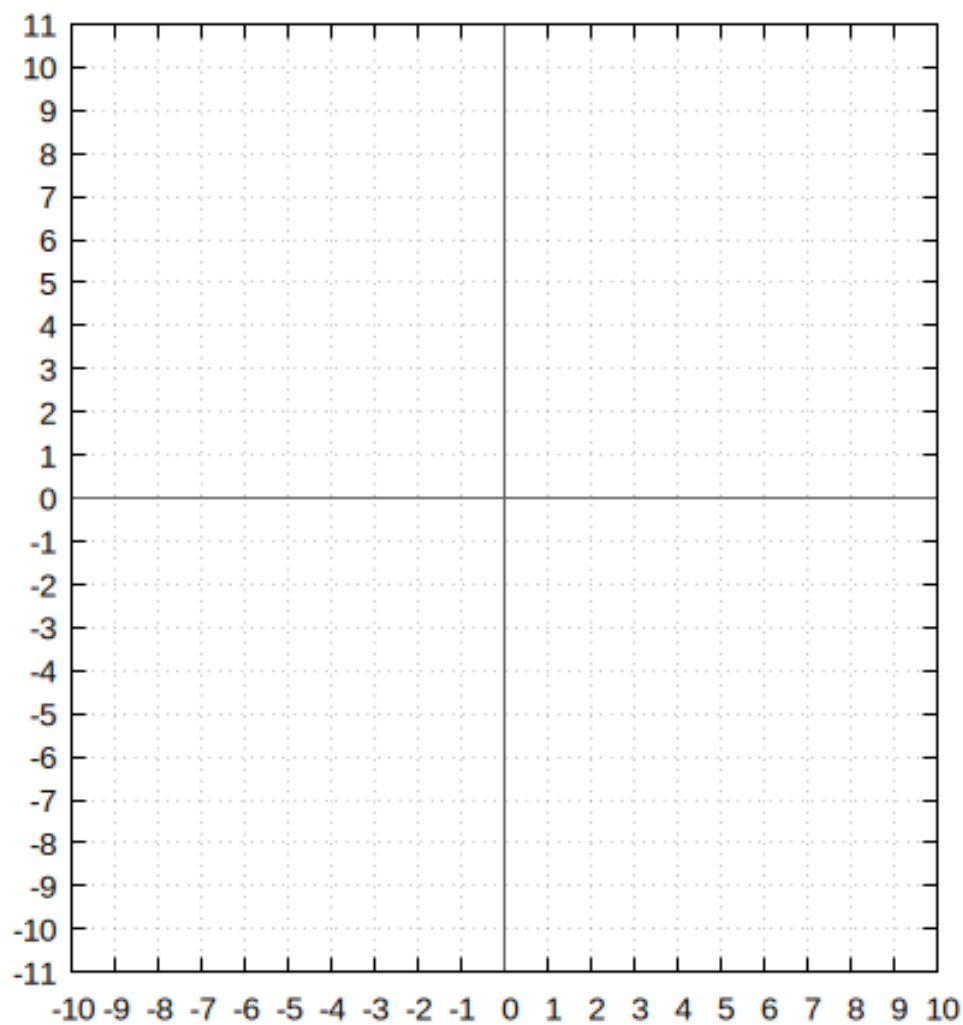
Features of $f(x) = \frac{ax + b}{cx + d}$

- If an x value is a zero of the denominator ONLY, this results in a vertical asymptote
 - Equation of vertical asymptote is _____
- If an x value is a zero of the numerator AND denominator, this results in a _____ in the graph NOT a vertical asymptote
- There is a horizontal asymptote at the ratio of the leading coefficients
 - Equation of horizontal asymptote is _____
- Forms a _____: the two branches of the graph of the function are equidistant from the point of intersection of the vertical and horizontal asymptotes
 - Once you know the shape of one branch, you can translate the points to graph the other branch
- You can find the x -intercept by setting $y = 0$ and solving for x
 - This results in _____
- You can find the y -intercept by setting $x = 0$ and solving for y
 - This results in _____

Part 2: Graphing a Quotient of Linear Functions

Example 1: Graph each of the following functions

a) $f(x) = \frac{x - 3}{x + 2}$



b) $g(x) = \frac{2x - 3}{x - 1}$

