Worksheet 2.6A, Rational functions
MATH 1410

For each of the rational functions given below, do the following:

1. Find the domain of the rational function.
2. Reduce the rational function to lowest terms, if possible.
3. Find the x- and y-intercepts of the graph of the rational function, if they exist.
4. Determine the location of any vertical asymptotes or holes in the graph, if they exist.
5. Analyze the end behavior of the rational function. Find the horizontal or slant asymptote, if one exists.
6. Use a sign diagram and plot additional points, as needed, to sketch the graph of the rational function.

⋆ ⋆ ⋆

1. $a(x) = \dfrac{2x^2 - 9}{x^2 - 9}$
2. $b(x) = \dfrac{x}{x - 1}$
3. $c(x) = \dfrac{x + 3}{x - 2}$
4. $d(x) = \dfrac{(x + 1)(2x - 2)}{(x - 3)(x + 4)}$
5. $e(x) = \dfrac{(2x - 1)(x + 2)}{(2x + 3)(3x - 4)}$
6. $f(x) = \dfrac{x^2 - 1}{x^2 + x - 6}$
7. $g(x) = \dfrac{x^2 - 4}{3x^2 + x - 4}$
8. $h(x) = \dfrac{x^2 - 6x + 8}{x^2 - x - 12}$
9. $i(x) = \dfrac{x^2 - 9}{x^3 - 4x}$
10. $j(x) = \dfrac{2x + 1}{x^2 + x + 1}$