

3.6 - Rational Functions

Review problems

1. **Domain of rational expressions.** Find the domain of: $\frac{x+1}{x^2+3x-4}$
2. **Finding intercepts.** Find x- and y-intercepts of: $x^2 - 3y = 12$,
3. **Solving rational equations.** Solve for x: $\frac{2x+3}{4x-5} = 0$
4. **Evaluating functions.** Given $f(x) = \frac{2x+12}{3-x}$ find $f(0)$ and $f(1)$.

Basic knowledge

5. Find vertical and horizontal asymptote(s), all intercepts and sketch the graph of the following functions:

$$(a) f(x) = \frac{2}{x+3} \quad (b) g(x) = \frac{x-5}{2x-8} \quad (c) f(x) = \frac{x^2-16}{x^2-1}$$

Intermediate

6. Find vertical and horizontal asymptote(s), all intercepts and sketch the graph of the following function:

$$g(x) = \frac{x^2 - 5x - 6}{-3x^2 + 9x}$$

Advanced

7. Find vertical, horizontal asymptote(s), all intercepts and sketch the graph of the following function:

$$h(x) = \frac{x^2 - 25}{x^2 - 5x}$$