MATH 131: ASSIGNMENT 2

Limits at infinity

Book reference: Section 1.5

Complete the following problems from the book:

- Section 1.5, problems 23, 24, 25

Then complete the following

Exercise 2.1. For each of the functions do the following:

- Compute the limit as $x \to \infty$ and $x \to -\infty$.
- Determine the shape of the asymptotes, describing them using limits.
- Draw a sketch of the graph of the function. Your sketch should include all roots and asymptotes.

(1) $f(x) = \dfrac{x^2 - 3x + 2}{x + 1}$

(2) $f(x) = \dfrac{x^2 - 3x + 2}{x - 1}$

(3) $f(x) = \dfrac{x^2 - 3x + 2}{2x^2 - x + 3}$

(4) $f(x) = \dfrac{x + 1}{x^2 - 2x + 1}$

(5) $f(x) = \dfrac{x - 1}{x^2 - 2x + 1}$

(6) $f(x) = \dfrac{x - 1}{x^2 - 1}$