2018-10-02 Tue
Chapter 1.5

Basics

- We say that

$$\lim_{x \to \infty} f(x) = L \tag{1}$$

If f approaches L at arbitrarily large values of the argument.

- Remember

$$\lim_{x \to \pm\infty} \frac{1}{x^p} = 0; \qquad (p > 0)\,. \tag{2}$$

and

$$\lim_{x \to \pm\infty} x^p = \text{Does nto exists}; \qquad (p > 0)\,. \tag{3}$$

Also none of the trigonometric limits

$$\lim_{x \to \pm\infty} \sin(x), \lim_{x \to \pm\infty} \cos(x), \lim_{x \to \pm\infty} \tan(x) \tag{4}$$

exist.

Computing limits at ∞

When dealing with rational functions, divide by the higer power

$$\lim_{x \to \pm\infty} \frac{x^2 - 3}{2x^2 + 4x - 1} = \lim_{x \to \pm\infty} \frac{x^2/x^2 - 3/x^2}{2x^2/^2 + 4x/x^2 - 1/x^2} = \lim_{x \to \pm\infty} \frac{1 - 3/x^2}{2 + 4/x - 1/x^2} = \frac{1}{2} \tag{5}$$