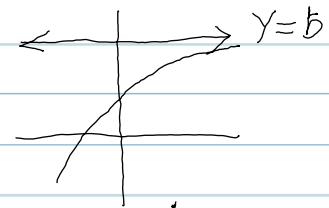


漸近線

(1) 試求 $f(x) = \frac{x^2}{9-x^2}$ 的漸近線

(a) 水平漸近線

$$\lim_{x \rightarrow \infty} f(x) = -1 \quad y = -1$$



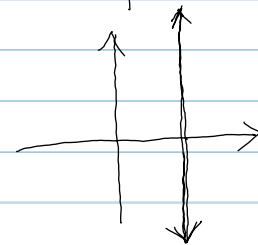
(b) 鉛直漸近線

$$9 - x^2 = (3-x)(3+x)$$

$$x = 3, \quad x = -3$$

(c) 斜漸近線

沒有



(2) 試求 $f(x) = \frac{x^2 + x - 6}{2(x-1)}$ 的漸近線

(a) 水平：沒有

(b) 鉛直： $x = 1$

(c) 斜漸近線

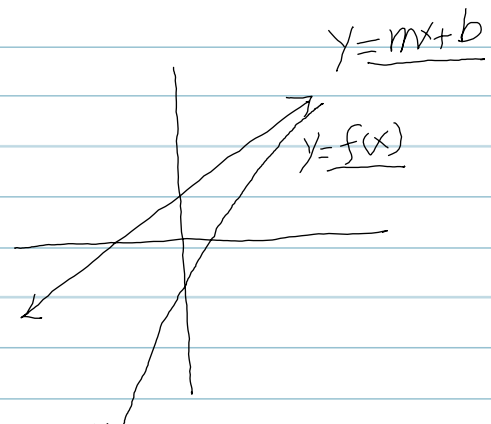
$$m = \lim_{x \rightarrow \infty} \frac{x^2 + x - 6}{2x(x-1)}$$

$$= \lim_{x \rightarrow \infty} \frac{x^2 + x - 6}{2x^2 - 2x} = \frac{1}{2}$$

$$b = \lim_{x \rightarrow \infty} \left(\frac{x^2 + x - 6}{2(x-1)} - \frac{x}{2} \right)$$

$$= \lim_{x \rightarrow \infty} \left(\frac{x^2 + x - 6 - x(x-1)}{2(x-1)} \right) = \lim_{x \rightarrow \infty} \frac{x^2 + x - 6 - x^2 + x}{2x - 2}$$

$$= \lim_{x \rightarrow \infty} \frac{2x - 6}{2x - 2} = 1 \quad y = \frac{1}{2}x + 1$$



當 $x \rightarrow \infty$

$$f(x) = mx + b$$

$$\lim_{x \rightarrow \infty} \frac{f(x) - b}{x} = m$$