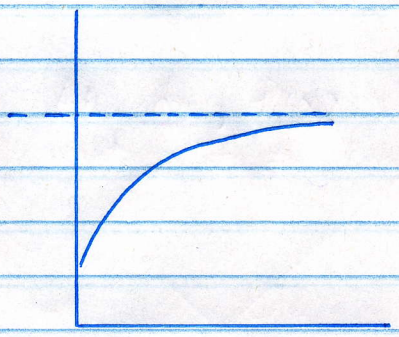
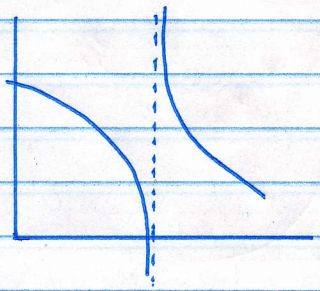
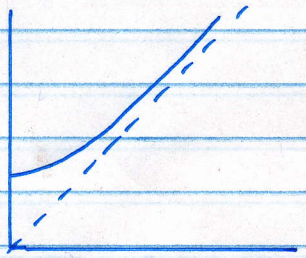
11/06/12



Horizontal asymptote



Vertical asymptote



Slant / oblique asymptote.

$f(x) = \frac{a(x)}{b(x)}$, $\deg a(x) = m$, $\deg b(x) = n$, $m > n$

Typical situation when we get slant asymptotes.

Eg). $y = \frac{(1-x)^3}{x^2} = \frac{-x^3+3x^2-3x+1}{x^2}$

↓ simplify it

$= (3-x) + \left(\frac{1-3x}{x^2}\right)$

long division: $x^2 \overline{)-x^3+3x^2-3x+1}$ (remainder)

$-x+3$

$-x^3$

$3x^2$

$3x^2$

0

$f(x) = (3-x) + \left(\frac{1-3x}{x^2}\right)$; $\lim_{x\to\infty} f(x) = \lim_{x\to\infty} (3-x) + 0$

linear

$y = (3-x)$ gives the slant asymptote.