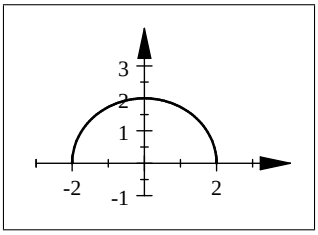
1.1 Domain and range of some functions

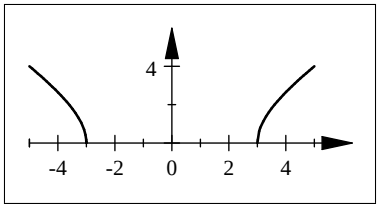
Function	Domain	Range
$\sqrt{\mathbf{a^2-x^2}}$	$[-\mathbf{a}, \mathbf{a}]$	$[\mathbf{0}, \mathbf{a}]$
$\sqrt{\mathbf{x^2-a^2}}$	$(-\infty, -\mathbf{a}] \cup [\mathbf{a}, \infty)$	$[\mathbf{0}, \infty)$
$\sqrt{\mathbf{x^2+a^2}}$	$\mathbb{R}$	$[\mathbf{a}, \infty)$

Exp (1) $f(x) = \sqrt{4 - x^2}$ (see Ecx. 38 in 1.1)
$f(x) = \sqrt{4 - x^2}$



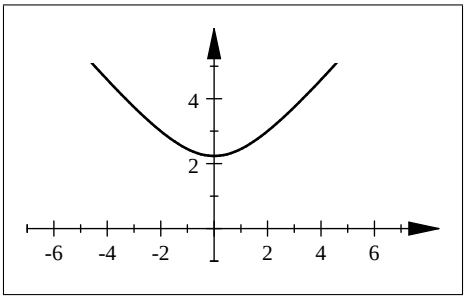
$D = [-2, 2]$, Range $=[0, 2]$

Exp (2) $f(x) = \sqrt{x^2 - 9}$



$D = (-\infty, -3] \cup [3, \infty)$, Range $=[0, \infty]$

Exp (3) $f(x) = \sqrt{x^2 + 5}$



$D = \mathbb{R}$, Range $= \left[\sqrt{5}, \infty\right)$

1.3
Add exc. 30

2.2

$$\lim_{x\to a}\frac{1}{(x-a)^n} = \begin{cases} \infty & n \text{ even} \\ & n \text{ odd} \quad \begin{cases} \lim\limits_{x\to a^+}\dfrac{1}{(x-a)^n} & \infty \\ \lim\limits_{x\to a^-}\dfrac{1}{(x-a)^n} & -\infty \end{cases} \end{cases}$$

2.5 Delete exp.(4)

2.6

$$\lim_{x\to\pm\infty}(a_nx^n+a_{n-1}x^{n-1}+a_{n-2}x^{n-2}+.....+a_2x^2+ax+a_0) = \lim_{x\to\pm\infty}(a_nx^n)$$

==========

$$\lim_{x\to\pm\infty}x^n = \begin{cases} \infty & n \text{ even} \\ & n \text{ odd} \quad \begin{cases} \lim\limits_{x\to+\infty}x^n & \infty \\ \lim\limits_{x\to-\infty}x^n & -\infty \end{cases} \end{cases}$$

3.3
After exp.(5)

(i) $\lim\limits_{x\to0}\dfrac{\sin nx}{mx} = \dfrac{n}{m}$

(ii) $\lim\limits_{x\to0}\dfrac{mx}{\sin nx} = \dfrac{m}{n}$

(iii) $\lim\limits_{x\to0}\dfrac{\tan nx}{mx} = \dfrac{n}{m}$

(iv) $\lim\limits_{x\to0}\dfrac{mx}{\tan nx} = \dfrac{m}{n}$

After exc.(41)

(i) $\lim\limits_{x\to0}\dfrac{\tan nx}{\sin mx} = \dfrac{n}{m}$

(ii) $\lim\limits_{x\to0}\dfrac{\sin mx}{\tan nx} = \dfrac{m}{n}$