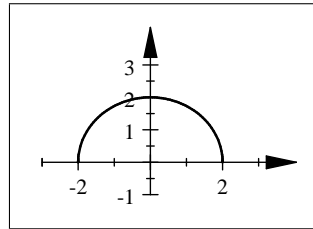


1.1 Domain and range of some functions

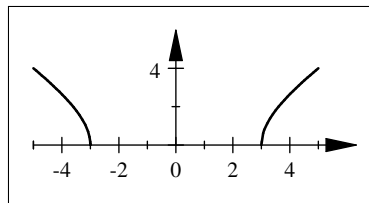
Function	Domain	Range
$\sqrt{a^2 - x^2}$	$[-a, a]$	$[0, a]$
$\sqrt{x^2 - a^2}$	$(-\infty, -a] \cup [a, \infty)$	$[0, \infty)$
$\sqrt{x^2 + a^2}$	\mathbb{R}	$[a, \infty)$

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



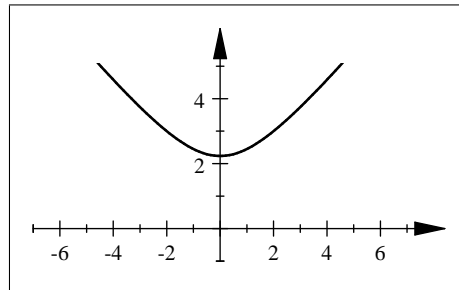
$D = [-2, 2]$, Range $= [0, 2]$

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



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

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



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

1.3

Add exc. 30

2.2

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

2.5 Delete exp.(4)

2.6

$$\lim_{x \rightarrow \pm\infty} (a_n x^n + a_{n-1} x^{n-1} + a_{n-2} x^{n-2} + \dots + a_2 x^2 + a_1 x + a_0) = \lim_{x \rightarrow \pm\infty} (a_n x^n)$$

=====

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

3.3

After exp.(5)

- (i) $\lim_{x \rightarrow 0} \frac{\sin nx}{\frac{nx}{m}} = \frac{n}{m}$
- (ii) $\lim_{x \rightarrow 0} \frac{\sin nx}{\tan nx} = \frac{n}{n}$
- (iii) $\lim_{x \rightarrow 0} \frac{\frac{nx}{m}}{\tan nx} = \frac{m}{n}$
- (iv) $\lim_{x \rightarrow 0} \frac{\frac{nx}{m}}{\tan nx} = \frac{m}{n}$

After exc.(41)

- (i) $\lim_{x \rightarrow 0} \frac{\tan nx}{\sin mx} = \frac{n}{m}$
- (ii) $\lim_{x \rightarrow 0} \frac{\sin mx}{\tan nx} = \frac{m}{n}$