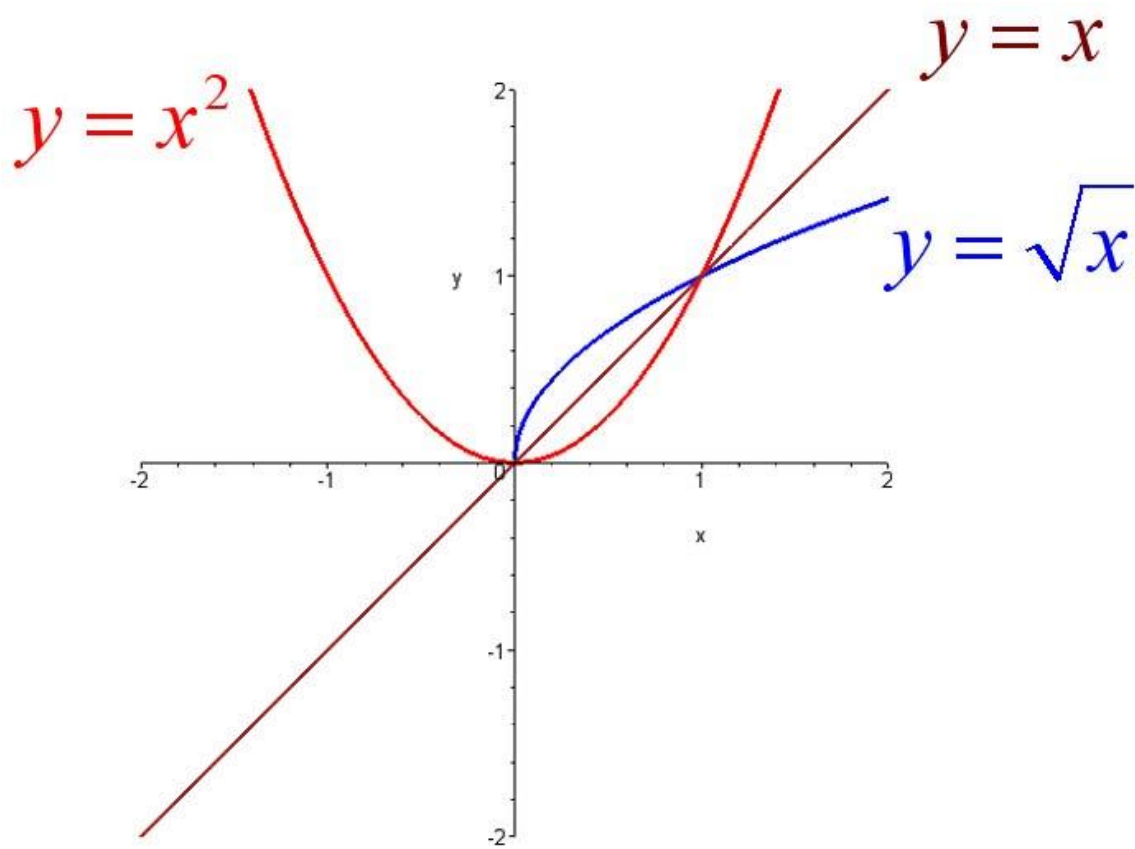
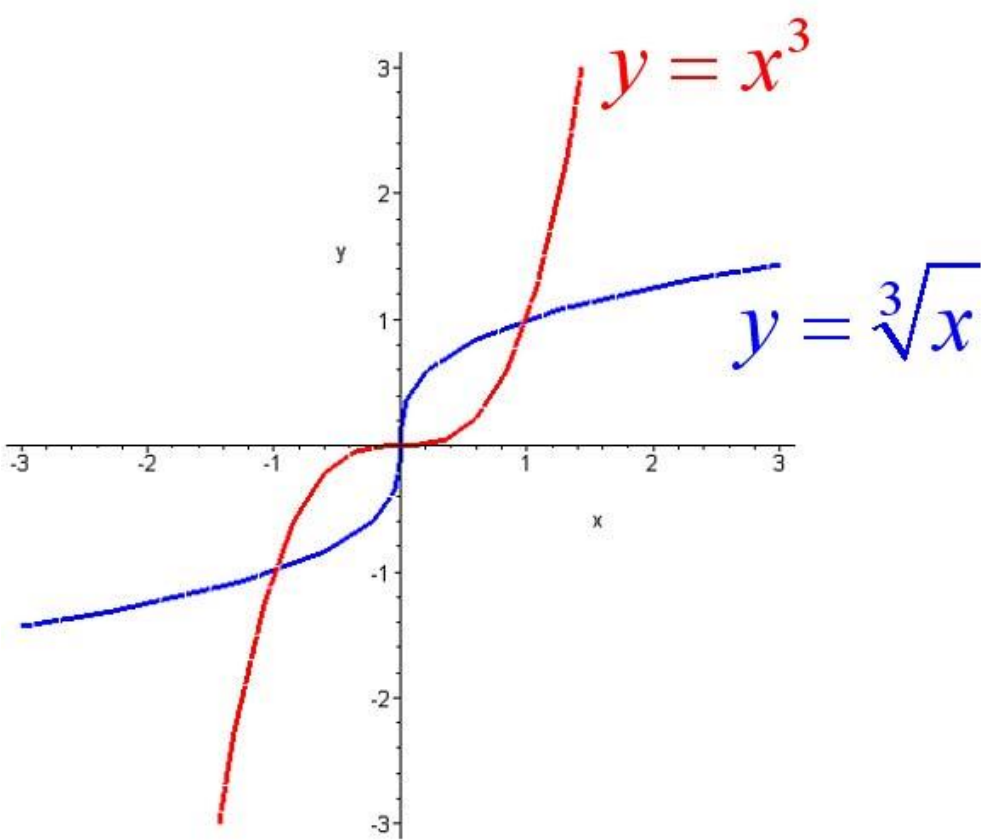


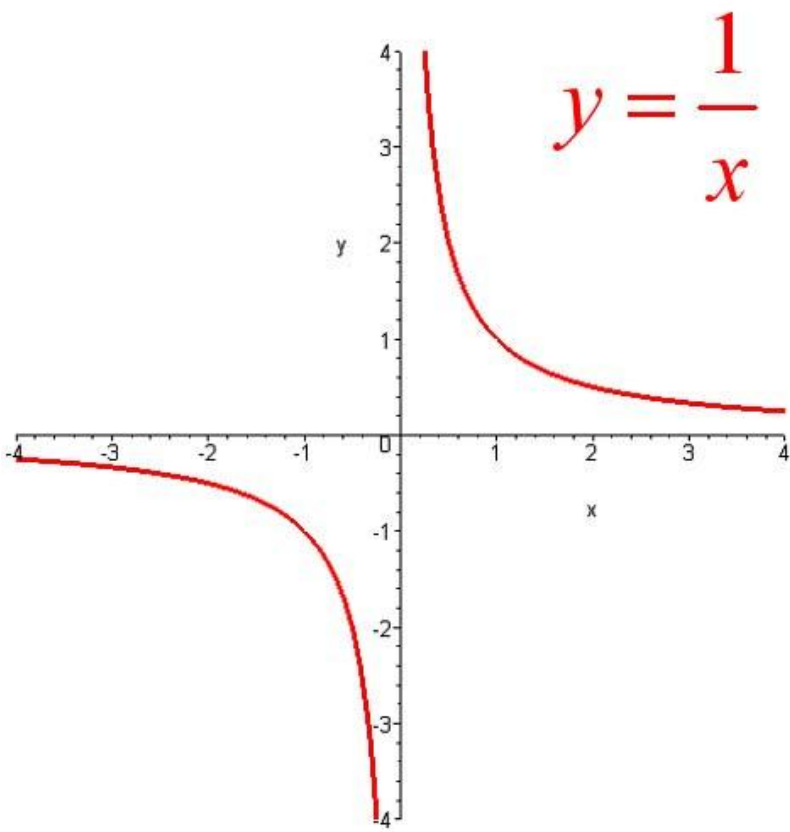
函数图形
基本初等函数
幂函数 (1)



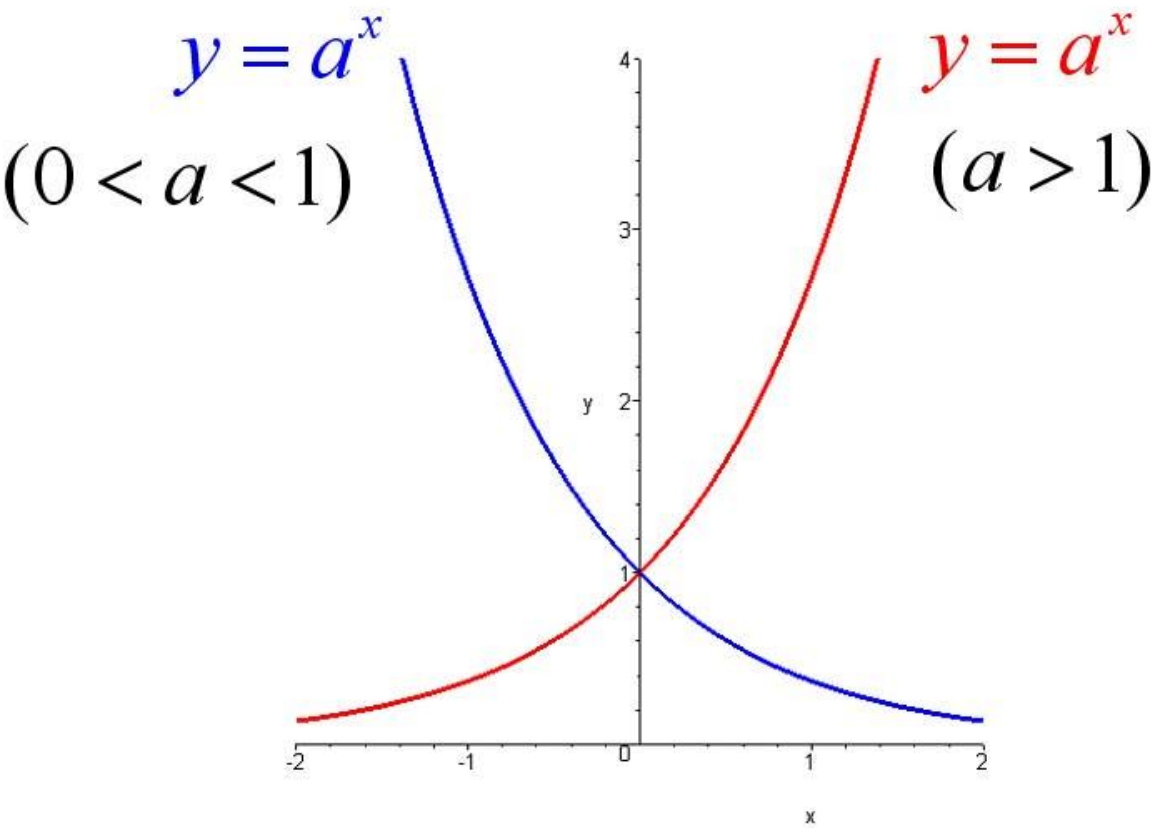
幂函数 (2)



幂函数 (3)



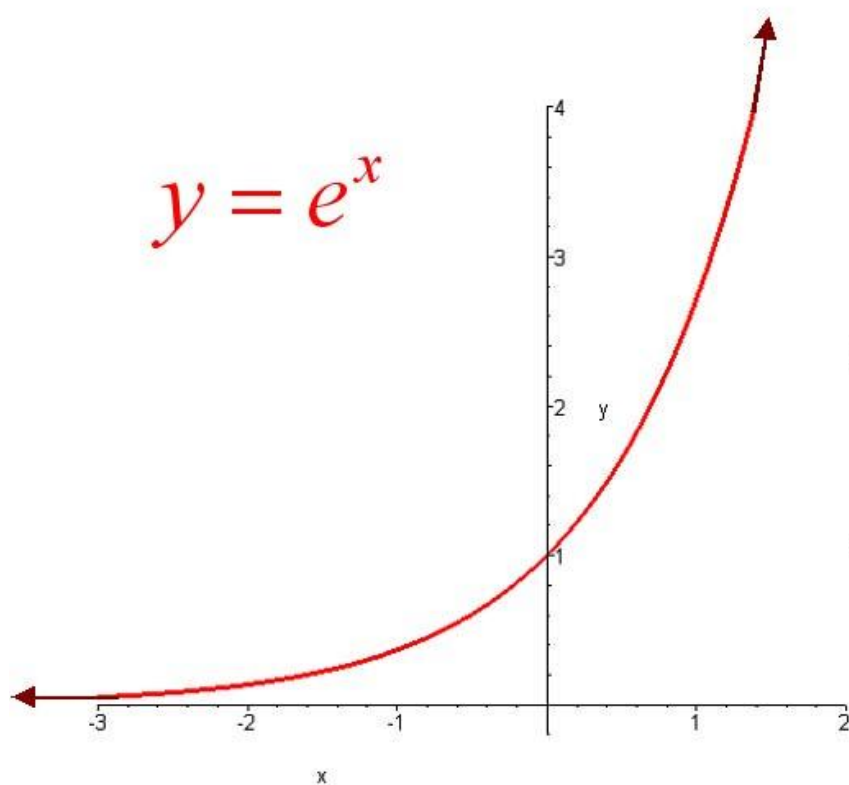
指数函数 (1)



指数函数 (2)

Observe that

$$y = e^x$$

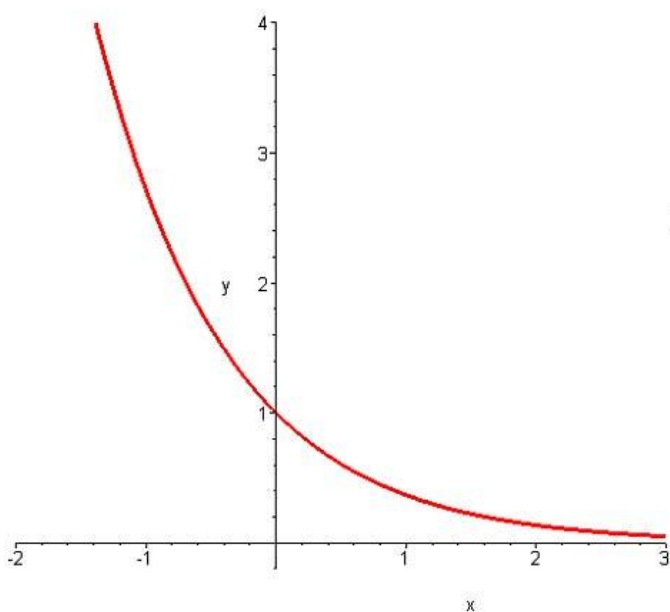


$$\lim_{x \rightarrow -\infty} e^x = 0$$

$$\lim_{x \rightarrow +\infty} e^x = +\infty$$

指数函数 (3)

$$y = \left(\frac{1}{e}\right)^x = \frac{1}{e^x}$$

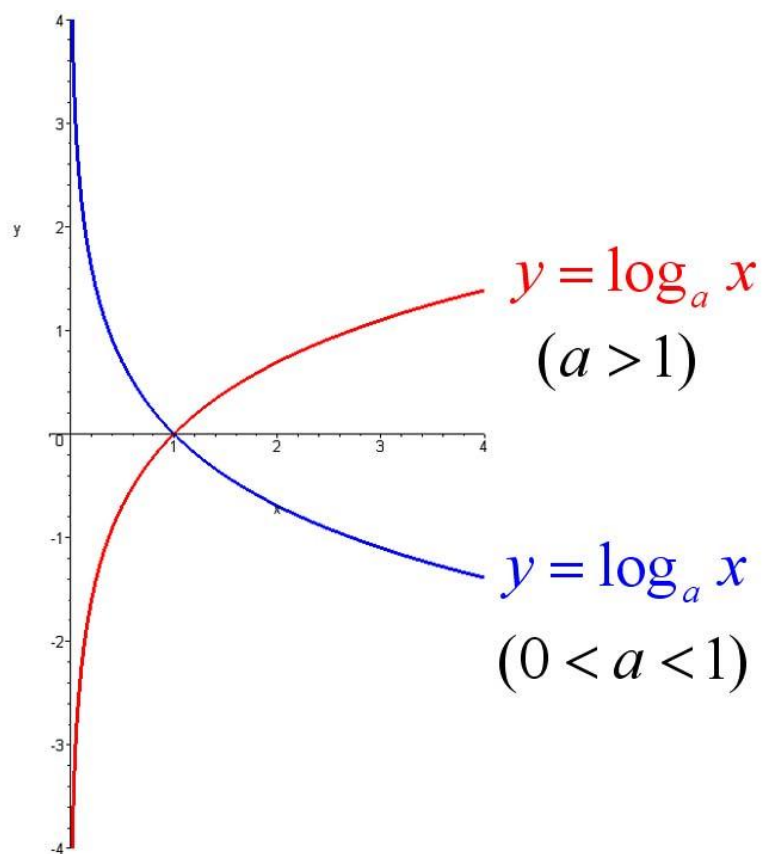


Observe that

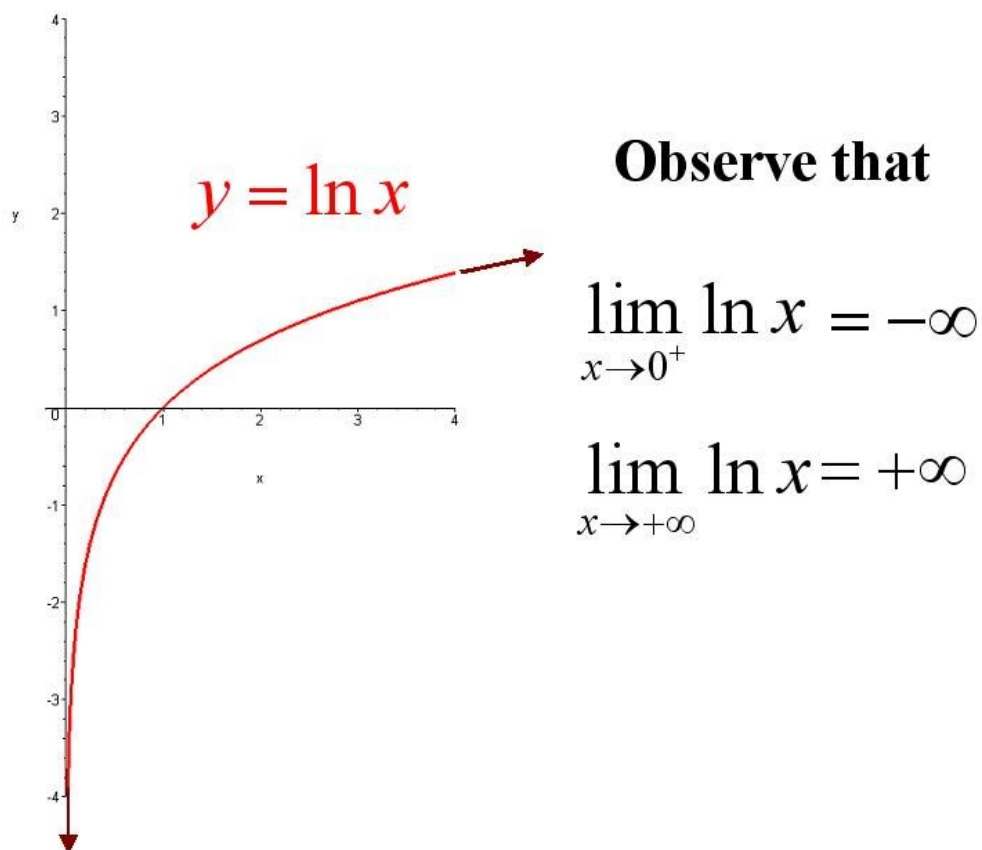
$$\lim_{x \rightarrow -\infty} \frac{1}{e^x} = +\infty$$

$$\lim_{x \rightarrow +\infty} \frac{1}{e^x} = 0$$

对数函数 (1)

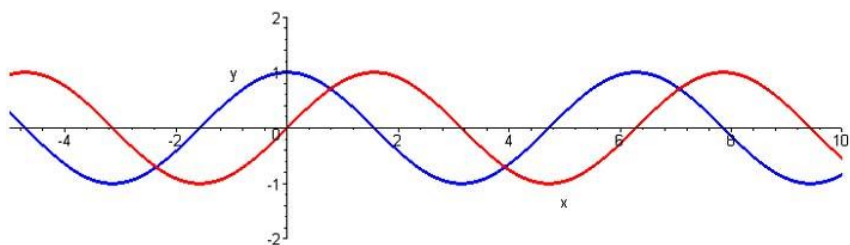


对数函数 (2)



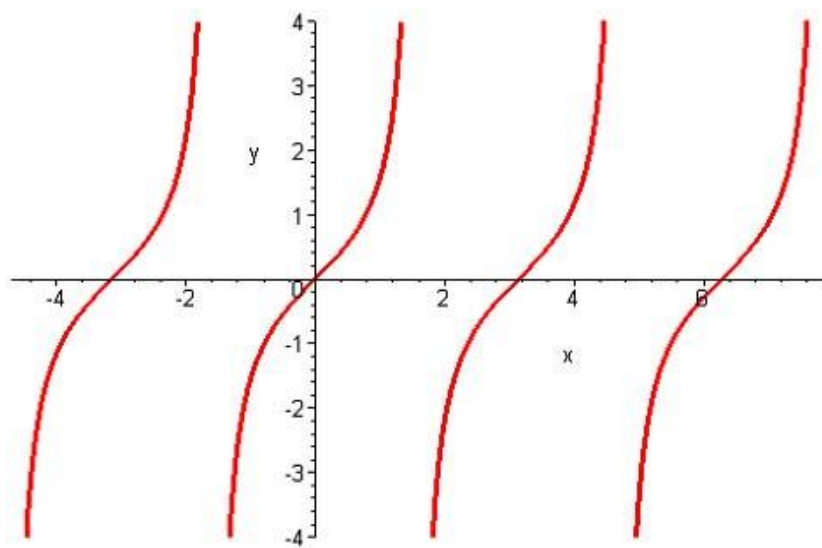
三角函数 (1)

$$y = \sin x \quad y = \cos x$$



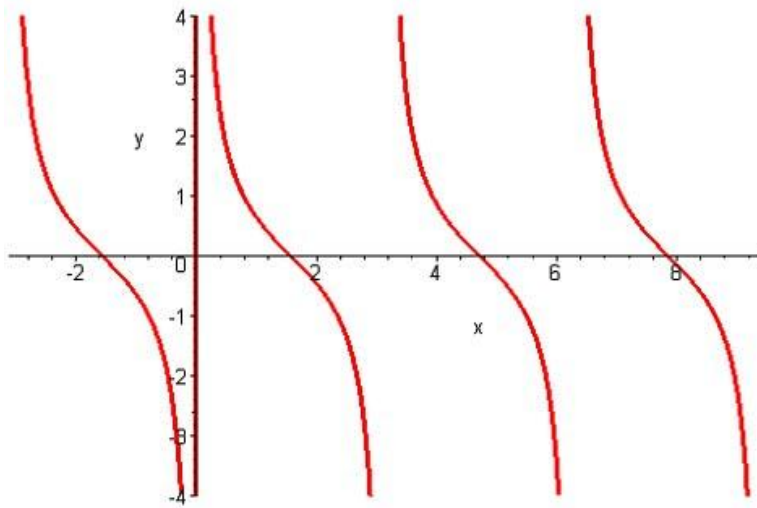
三角函数 (2)

$$y = \tan x$$



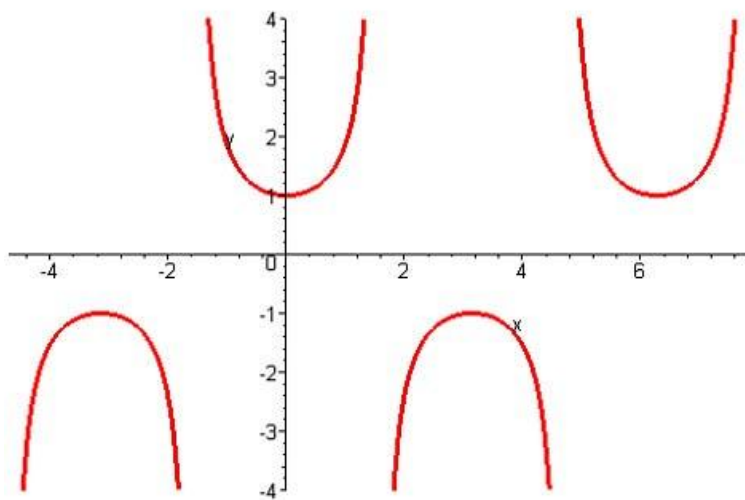
三角函数 (3)

$$y = \cot x$$



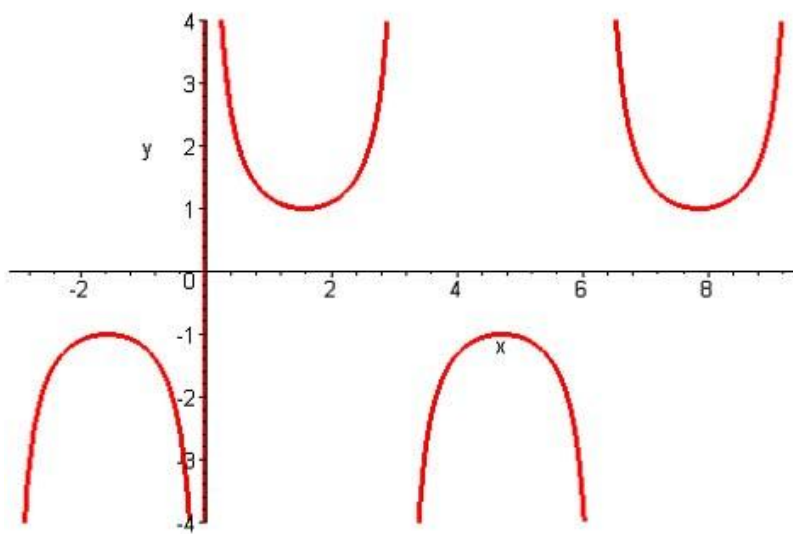
三角函数（4）

$$y = \sec x$$



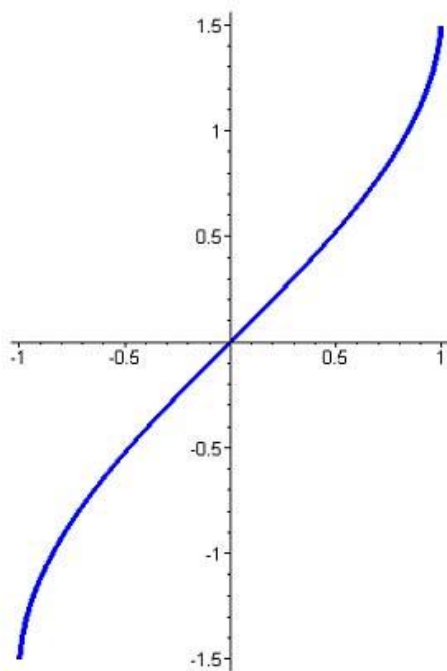
三角函数（5）

$$y = \csc x$$



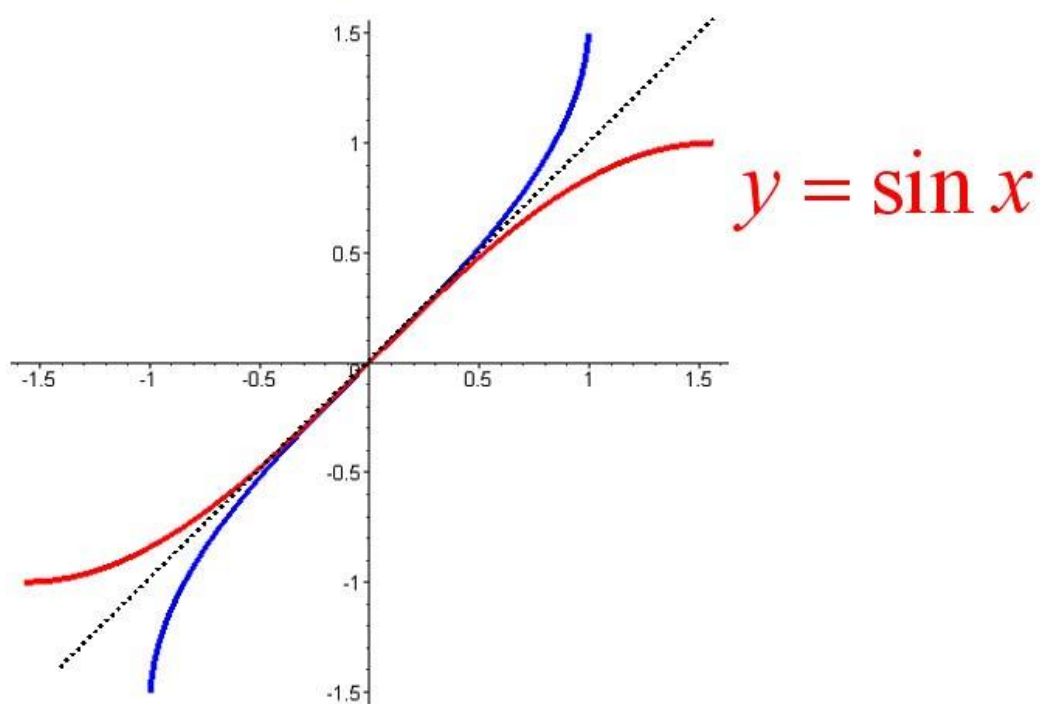
反三角函数 (1)

$$y = \arcsin x$$



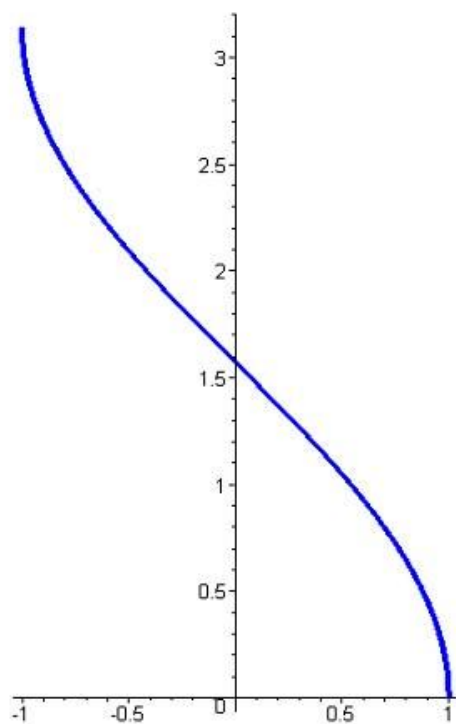
反三角函数 (2)

$$y = \arcsin x$$



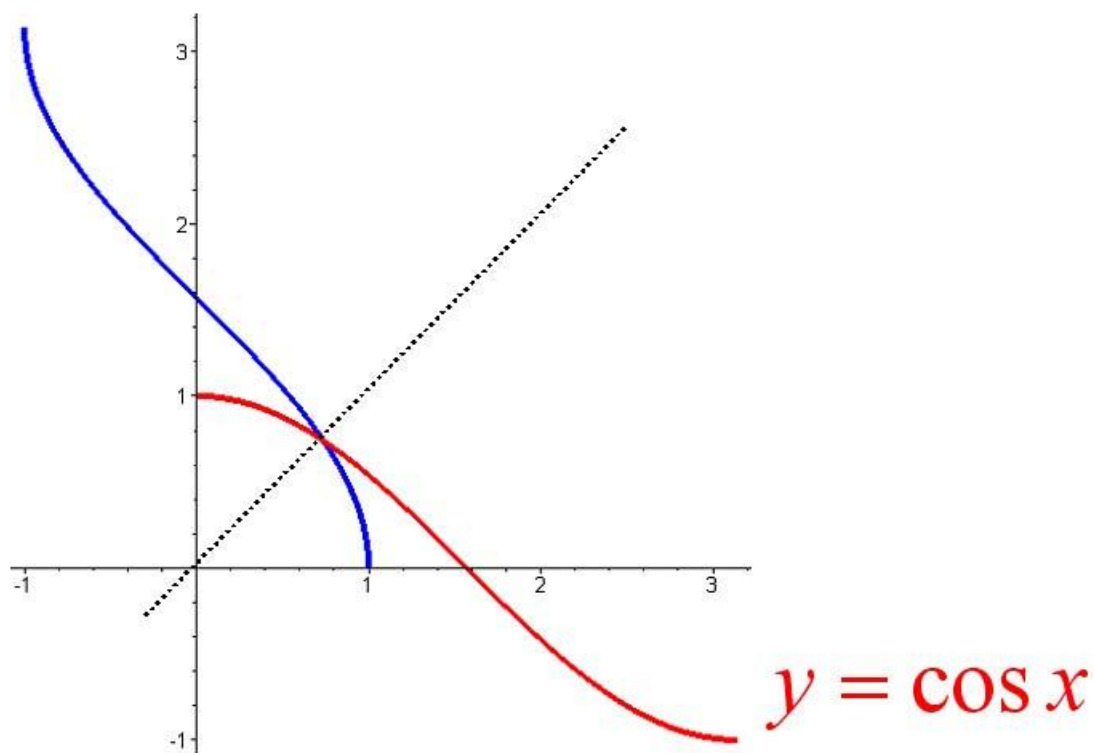
反三角函数 (3)

$$y = \arccos x$$



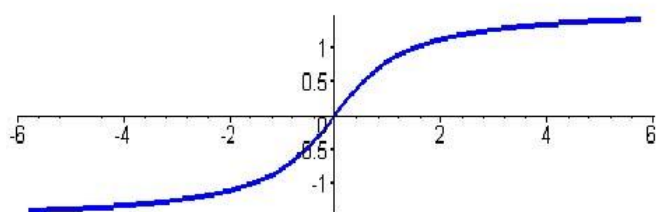
反三角函数 (4)

$$y = \arccos x$$



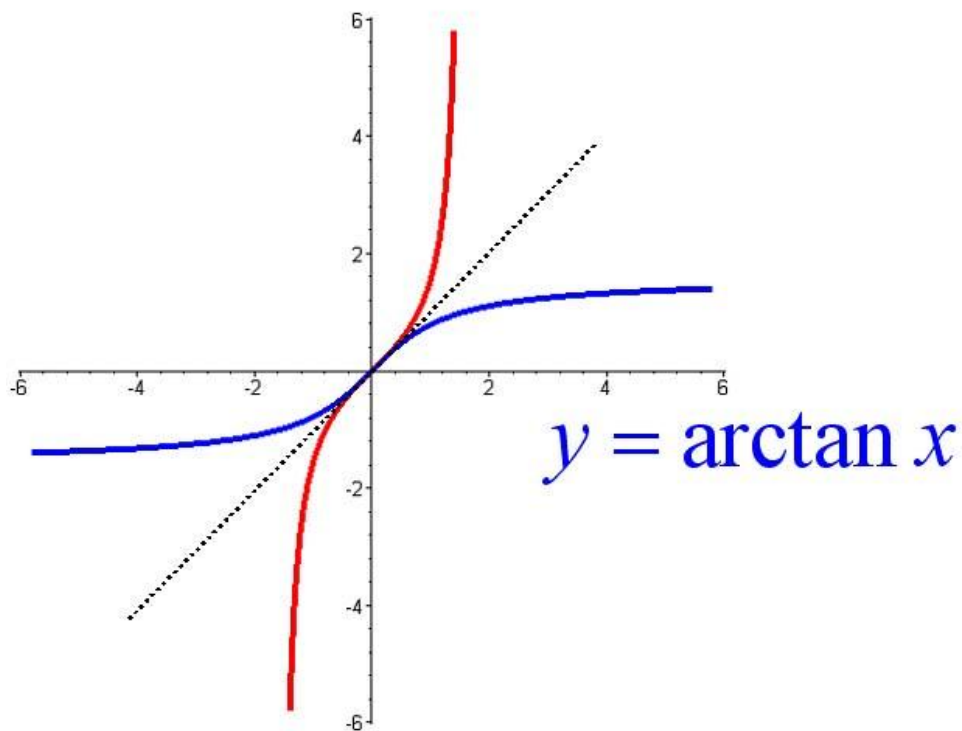
反三角函数 (5)

$$y = \arctan x$$



反三角函数 (6)

$$y = \tan x$$

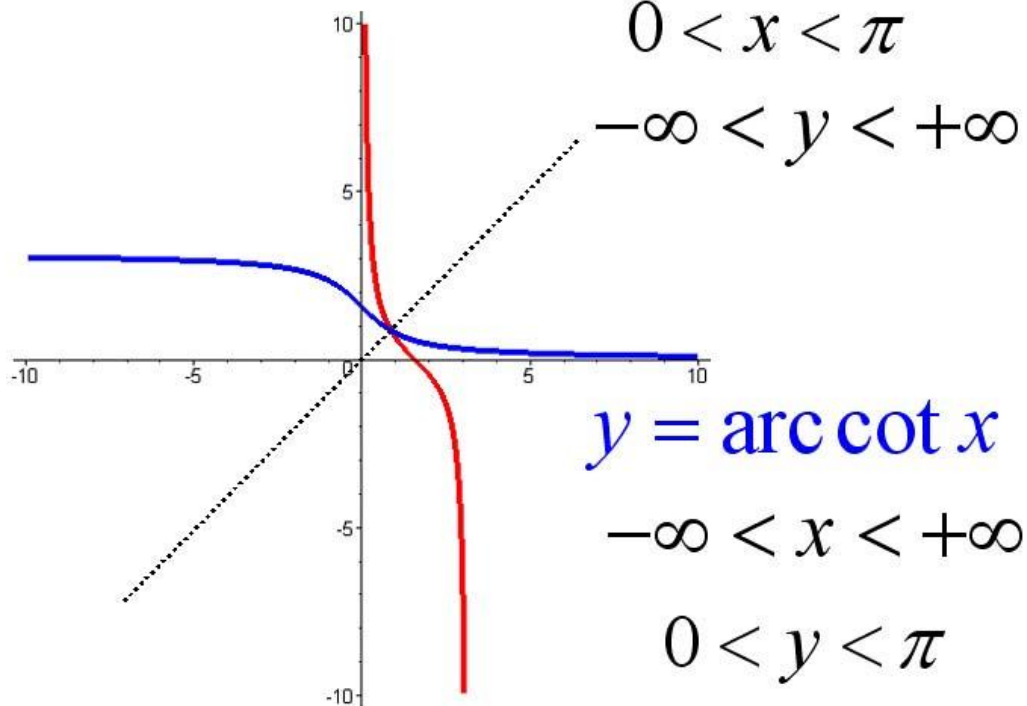


反三角函数 (7)

$$y = \cot x$$

$$0 < x < \pi$$

$$-\infty < y < +\infty$$



$$y = \operatorname{arccot} x$$

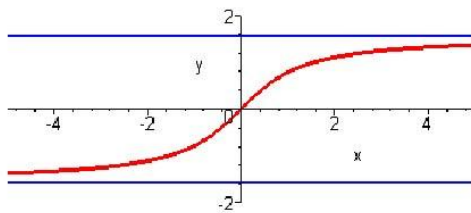
$$-\infty < x < +\infty$$

$$0 < y < \pi$$

反三角函数 (8)

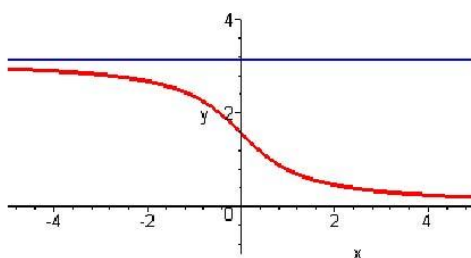
$$y = \arctan x$$

$$\lim_{x \rightarrow -\infty} \arctan x = -\frac{\pi}{2}$$



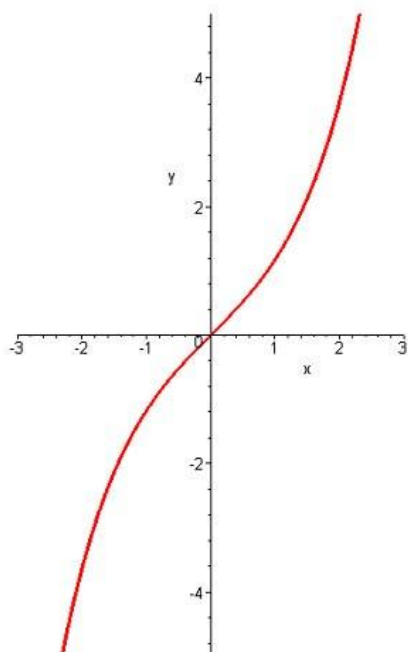
$$\lim_{x \rightarrow +\infty} \arctan x = \frac{\pi}{2}$$

$$y = \operatorname{arccot} x$$

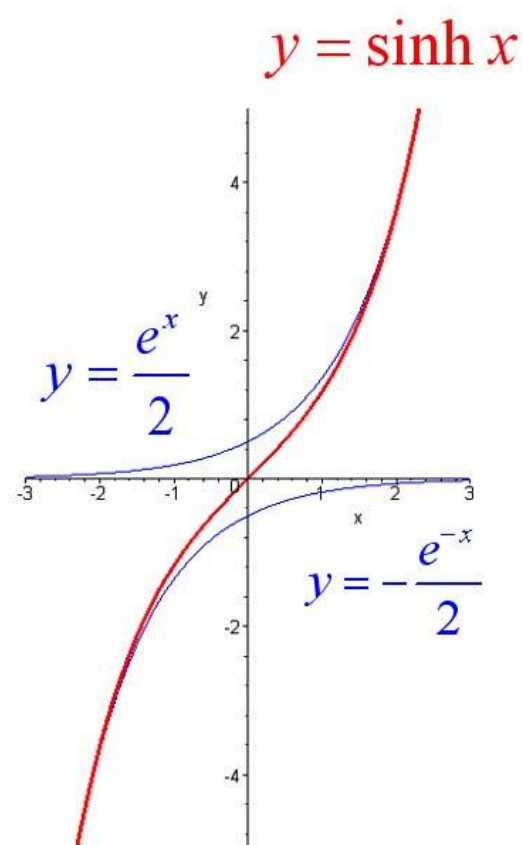


双曲函数 (1)

$$\text{Hyperbolic sine} \quad y = \sinh x$$

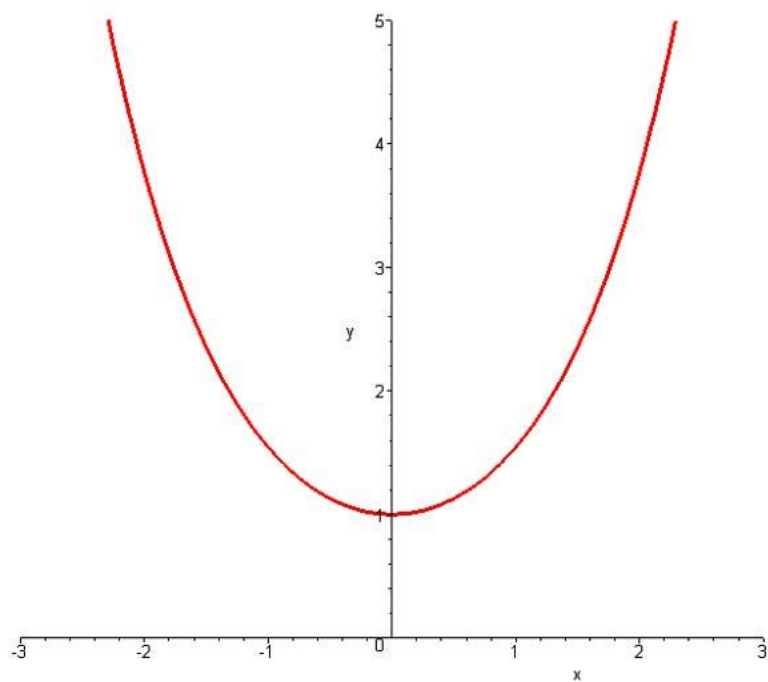


双曲函数 (2)



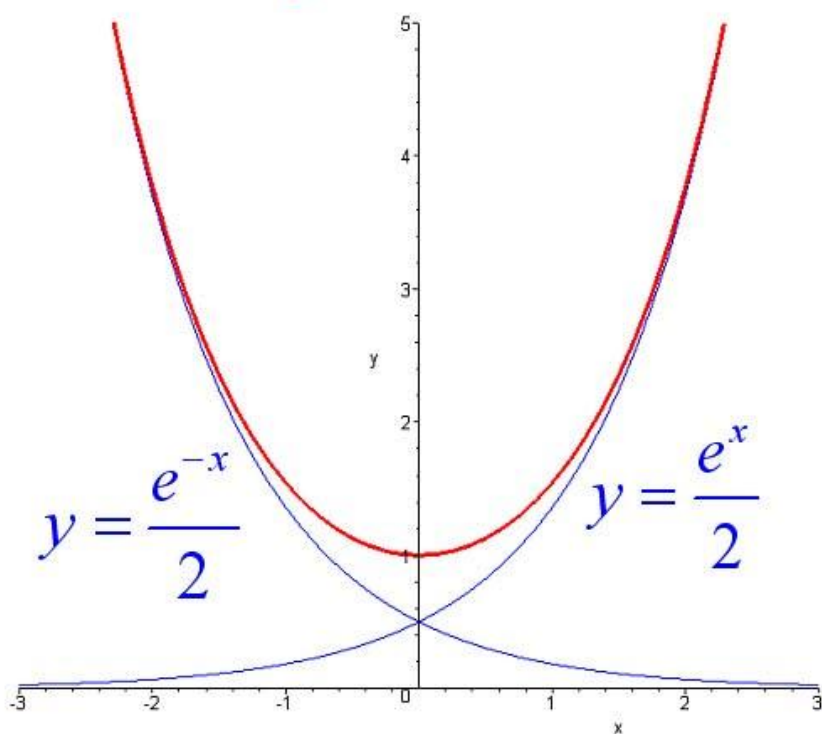
双曲函数 (3)

Hyperbolic cosine $y = \cosh x$



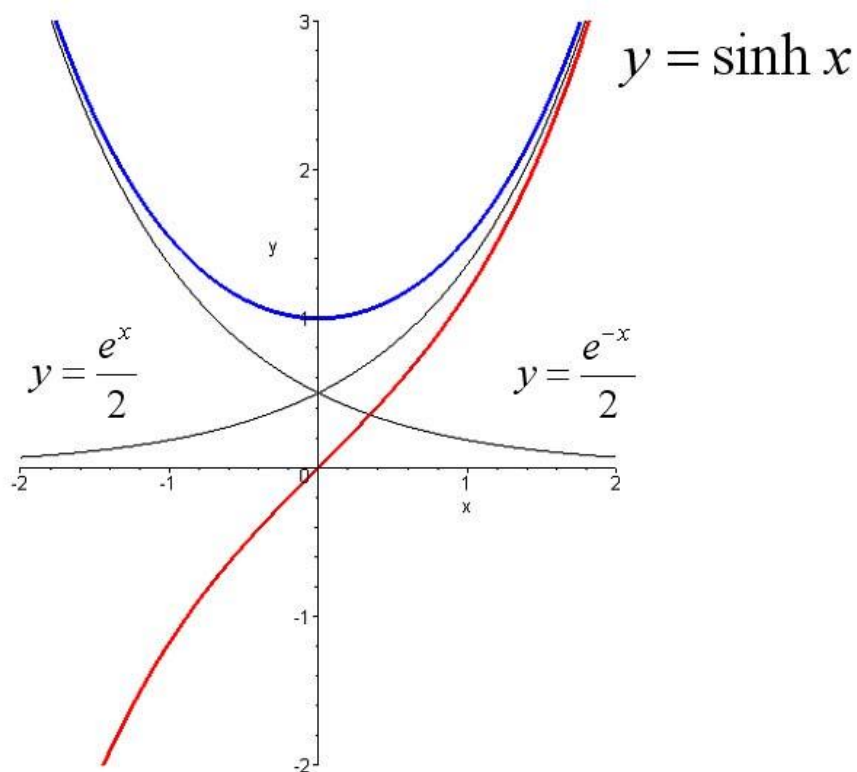
双曲函数 (4)

$$y = \cosh x$$



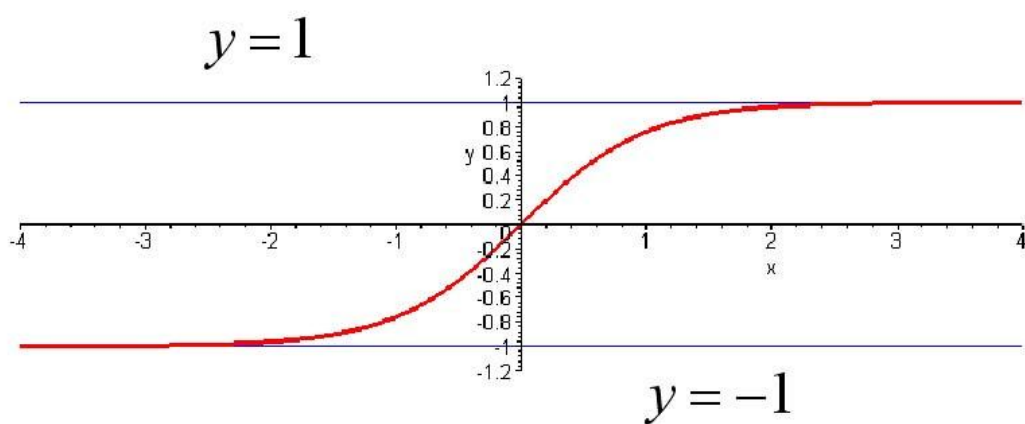
双曲函数 (5)

$$y = \cosh x$$



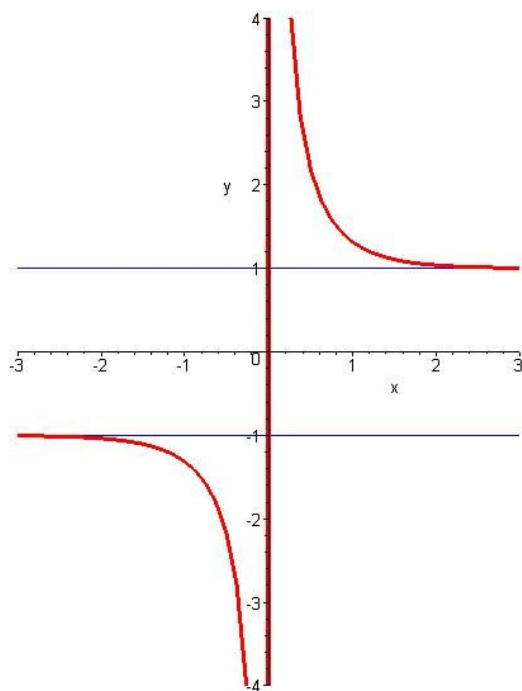
双曲函数 (6)

Hyperbolic tangent $y = \tanh x$



双曲函数 (7)

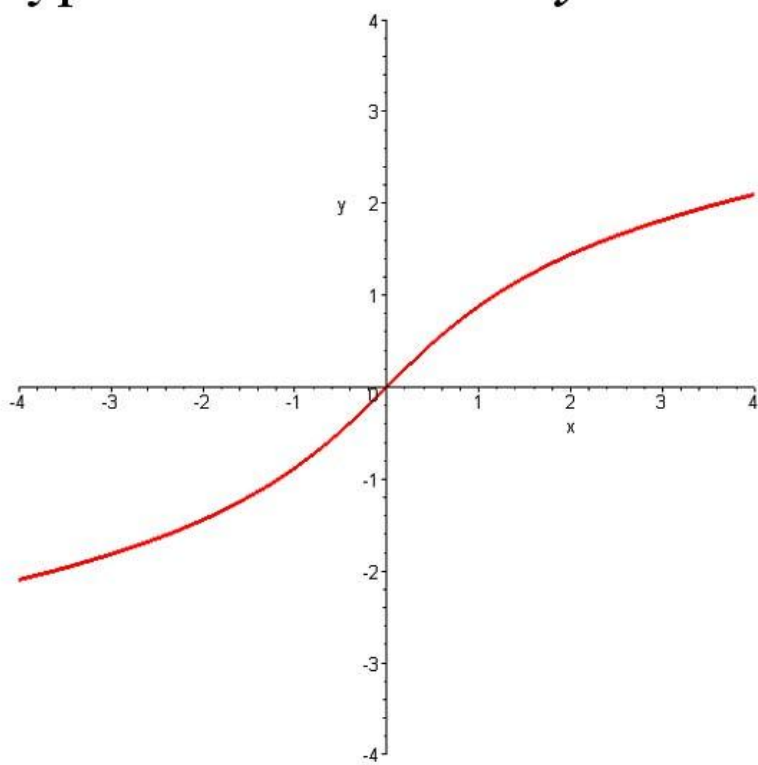
Hyperbolic cotangent $y = \coth x$



反双曲函数 (1)

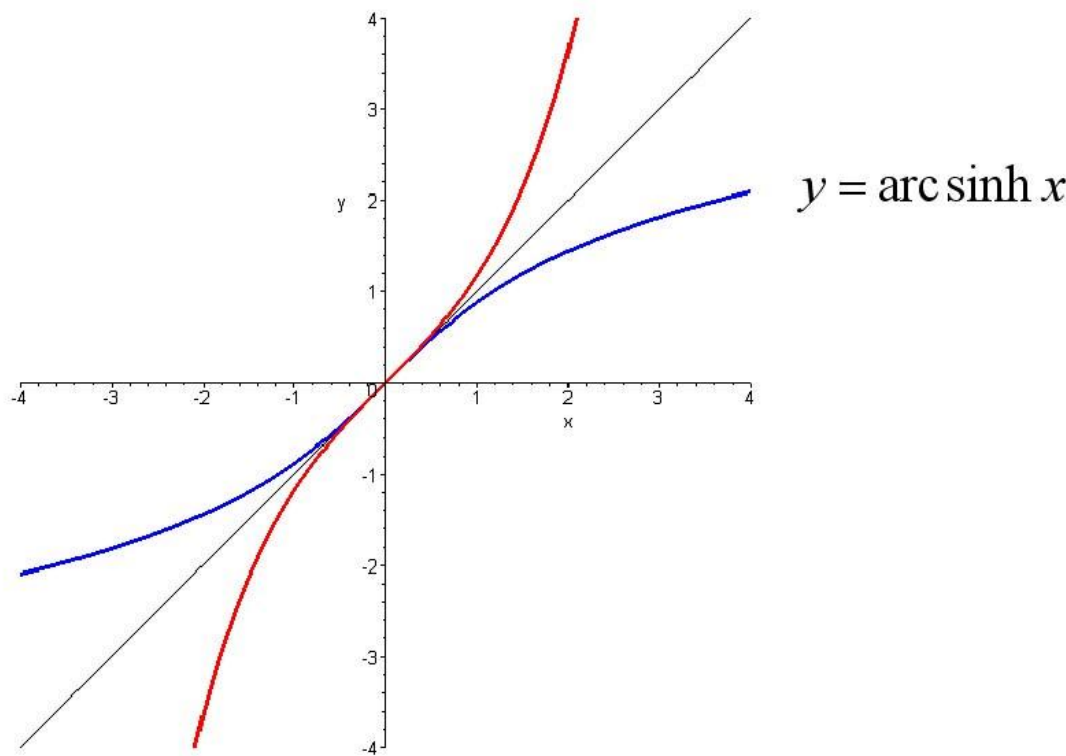
Inverse hyperbolic sine

$$y = \operatorname{arc\,sinh} x$$



反双曲函数 (2)

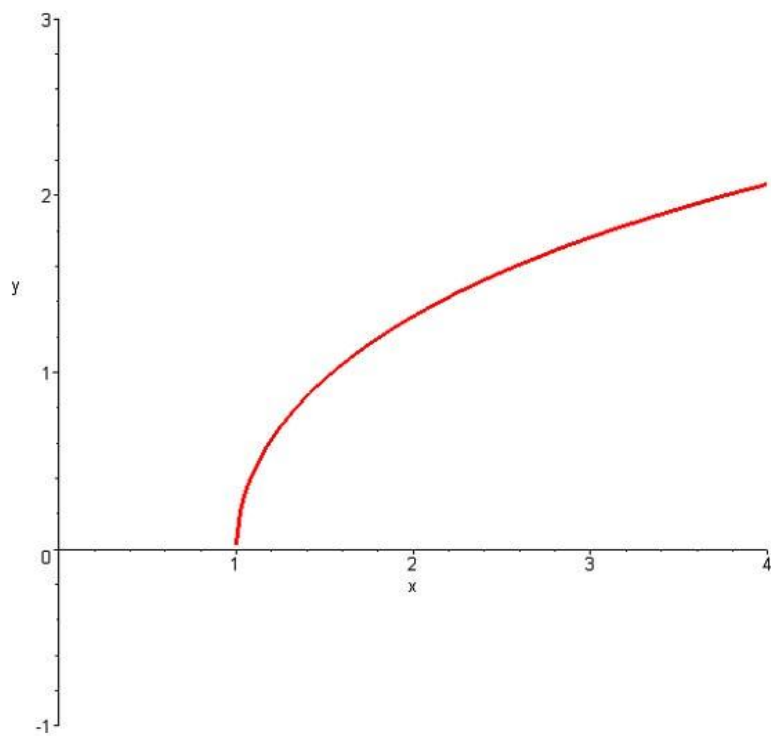
$$y = \sinh x$$



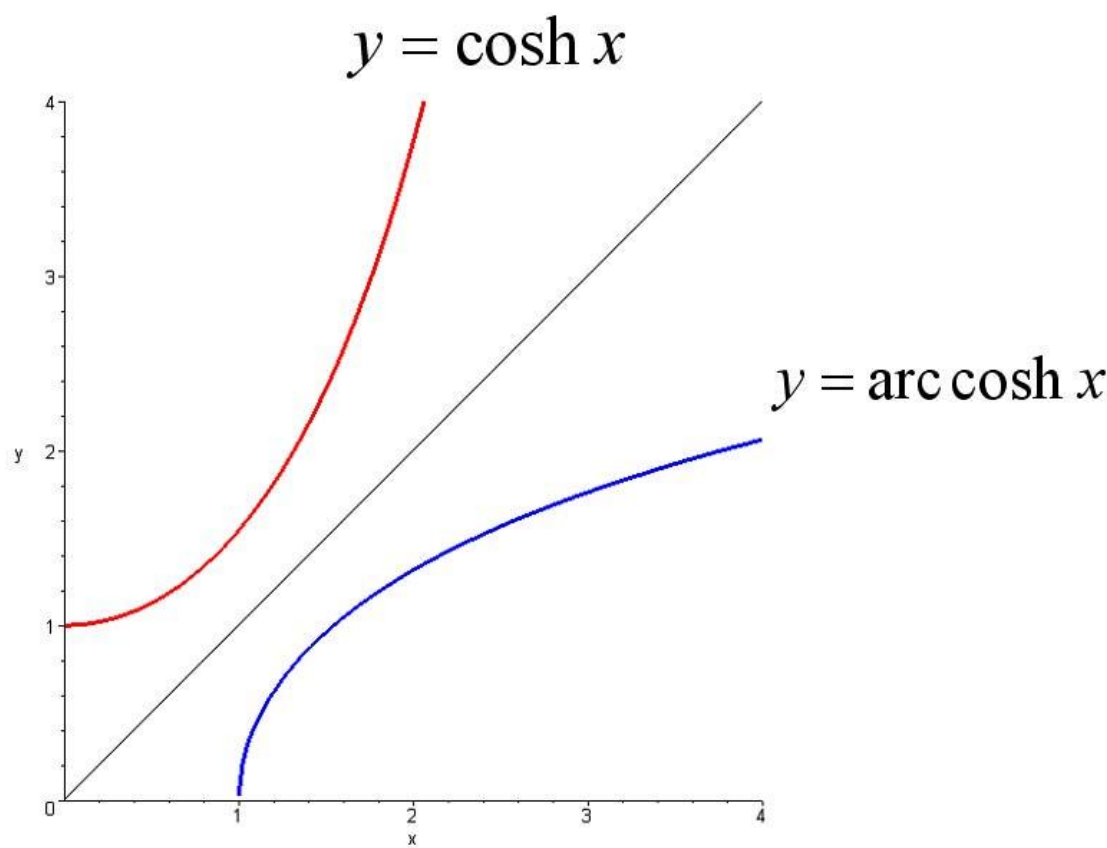
反双曲函数 (3)

Inverse hyperbolic cosine

$y = \operatorname{arc} \cosh x$



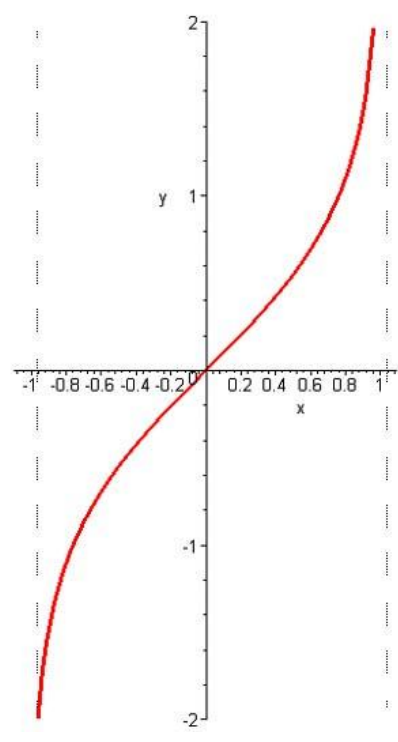
反双曲函数 (4)



反双曲函数 (5)

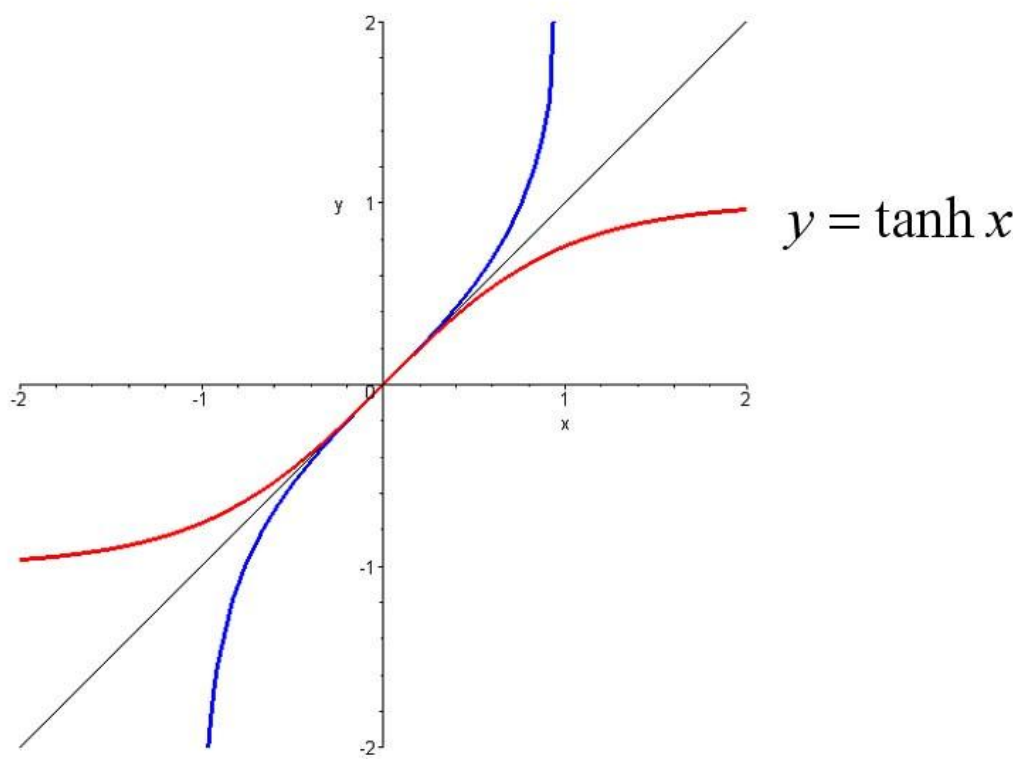
Inverse hyperbolic tangent

$y = \operatorname{arc\,tanh} x$



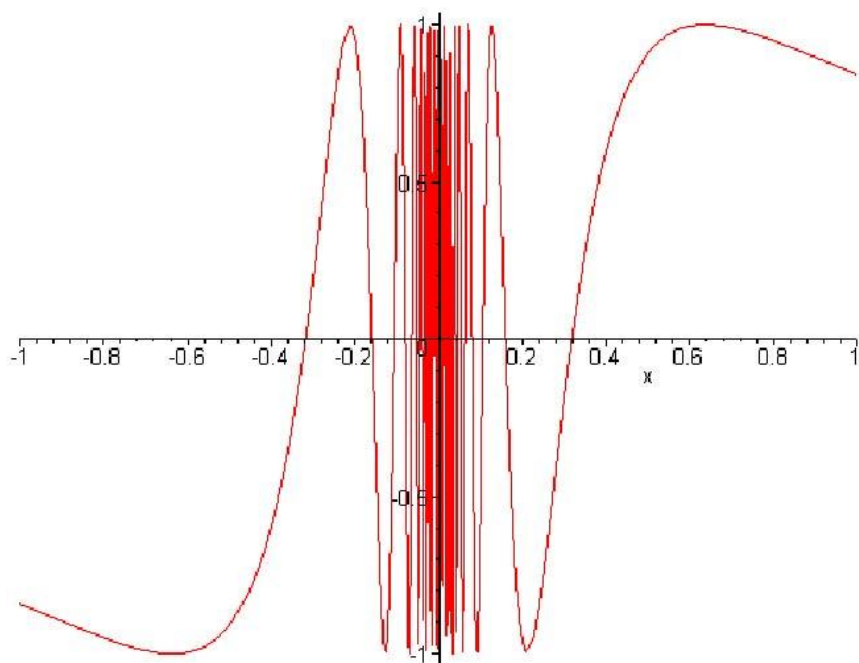
反双曲函数 (6)

$$y = \operatorname{arc\,tanh} x$$



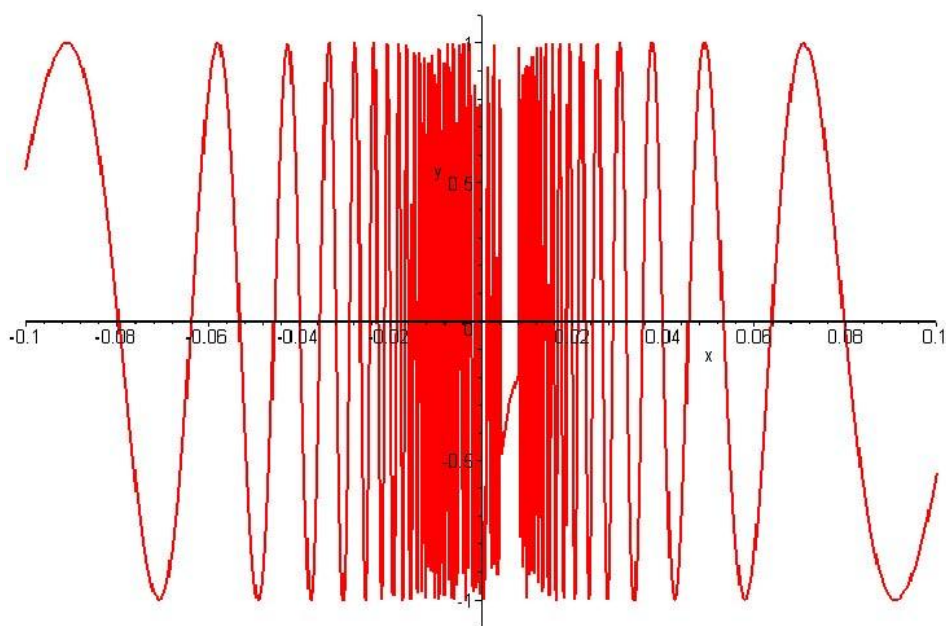
$y=\sin(1/x)$ (1)

$$y = \sin \frac{1}{x} \quad (-1 < x < 1)$$



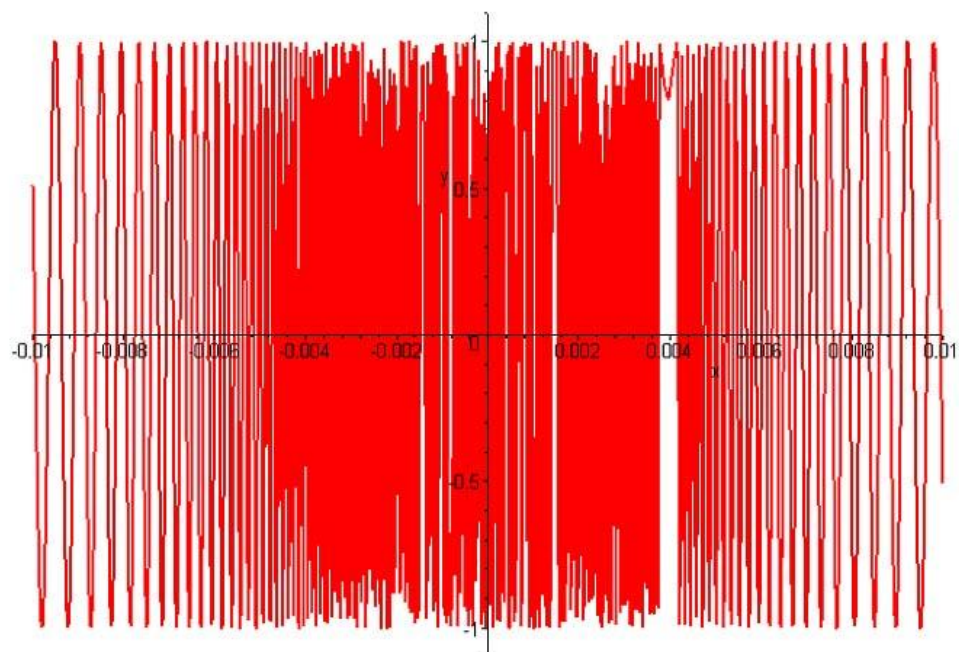
$y = \sin(1/x)$ (2)

$$y = \sin \frac{1}{x} \quad (-0.1 < x < 0.1)$$



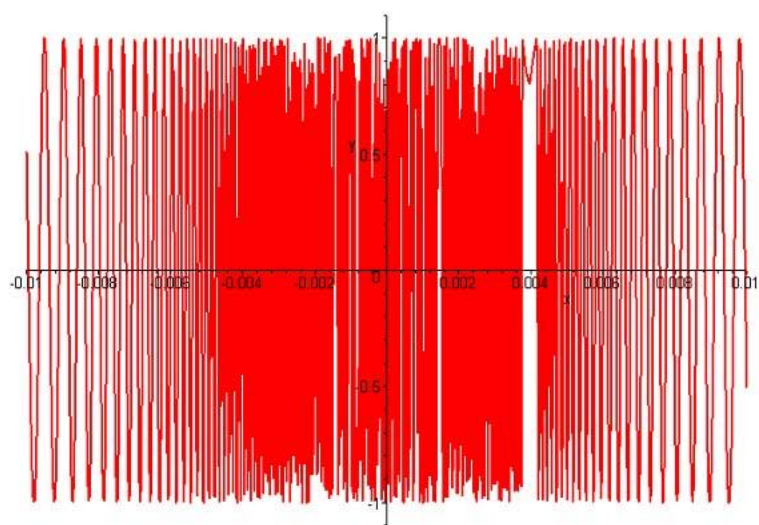
$y = \sin(1/x)$ (3)

$$y = \sin \frac{1}{x} \quad (-0.01 < x < 0.01)$$

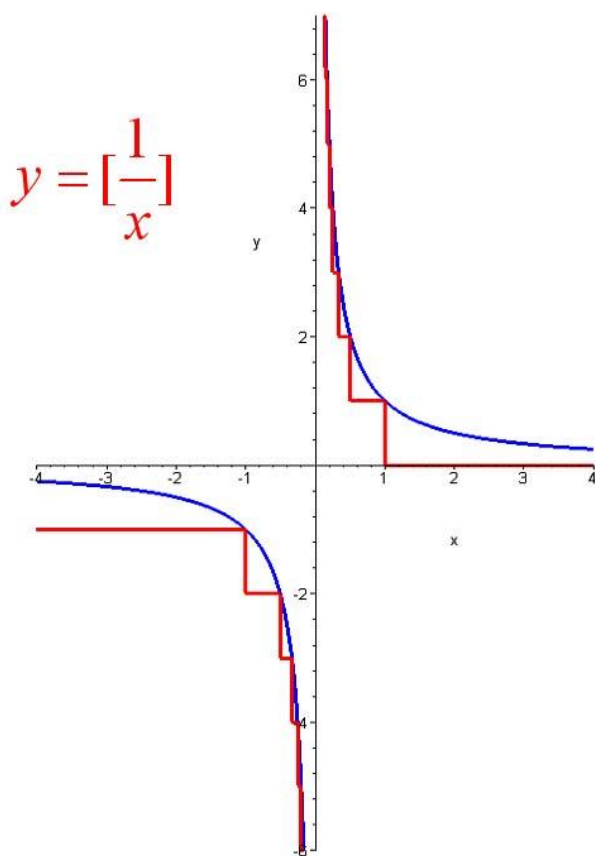


$y = \sin(1/x)$ (4)

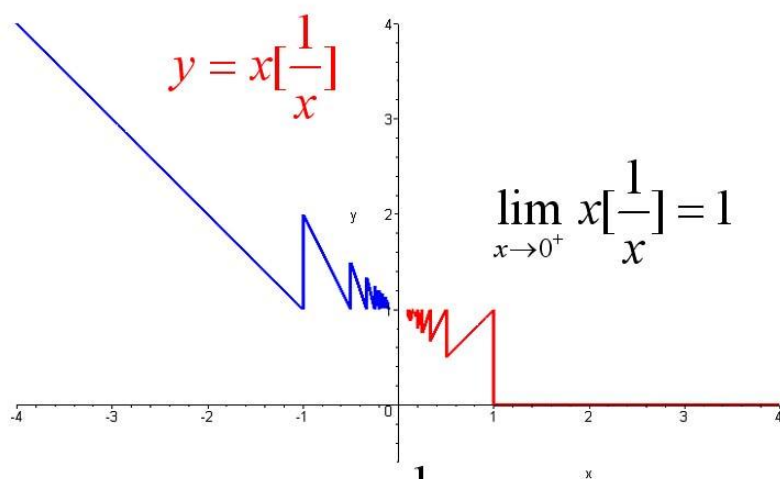
$$y = \sin \frac{1}{x} \quad \text{在原点附近无限振荡}$$



$y = [1/x](1)$



$$y = [1/x](2)$$



It seems that $\lim_{x \rightarrow 0^-} x \left[\frac{1}{x} \right] = 1$

Thus $\lim_{x \rightarrow 0} x \left[\frac{1}{x} \right] = 1$