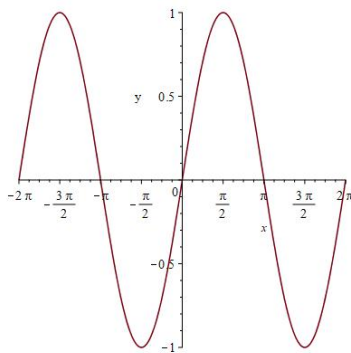# Trigonometric and Hyperbolic Curves[1]
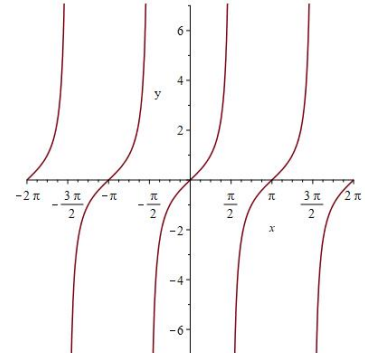
Sine
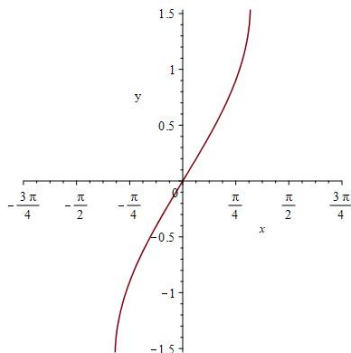$$y = \sin(x)$$
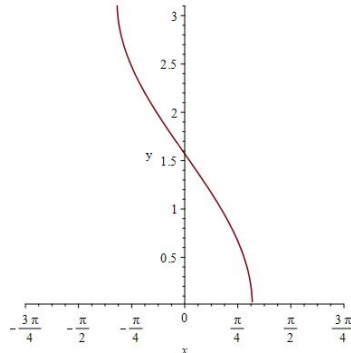
Cosine
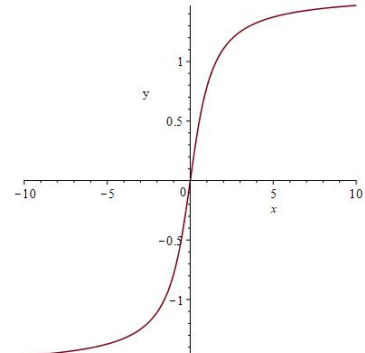$$y = \cos(x)$$
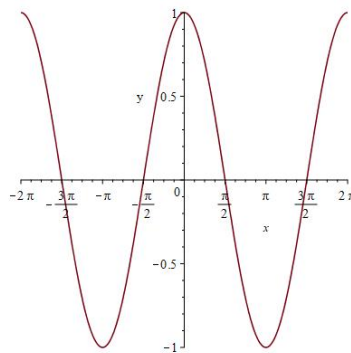
Tangent
$$y = \tan(x)$$
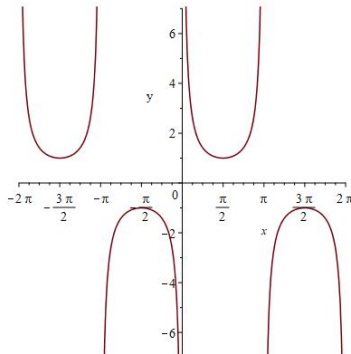
Inverse Sine
$$y = \arcsin(x)$$

Inverse Cosine
$$y = \arccos(x)$$

Inverse Tangent
$$y = \arctan(x)$$

Cosecant
$$y = \csc(x)$$

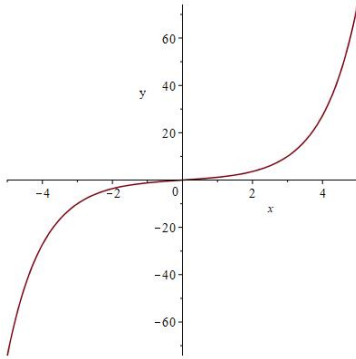### Secant
$$y = \sec(x)$$
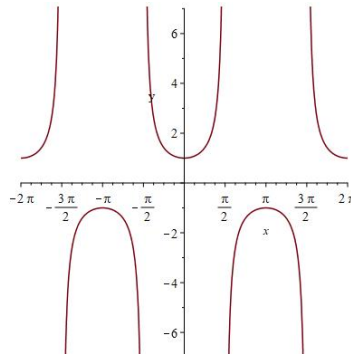
Cotangent
$$y = \cot(x)$$

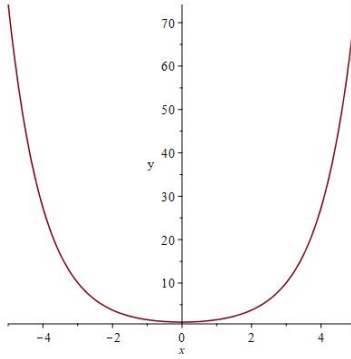---
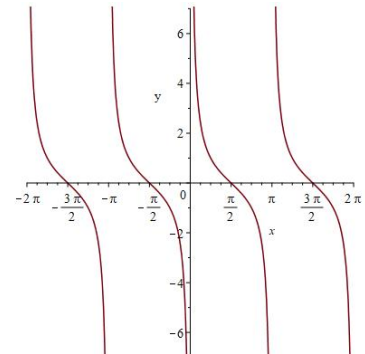
[1]see also Basic Curves

Hyperbolic Sine
$y = \sinh(x)$

$$y = \sinh(x) = \frac{e^x - e^{-x}}{2}$$
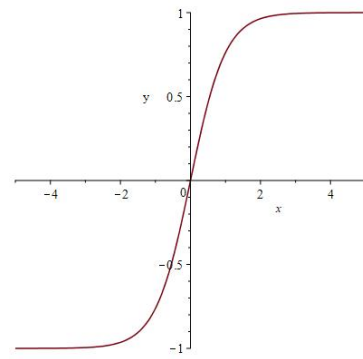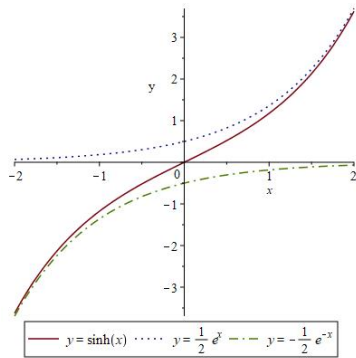
Hyperbolic Cosine
$y = \cosh(x)$

$$y = \cosh(x) = \frac{e^x + e^{-x}}{2}$$
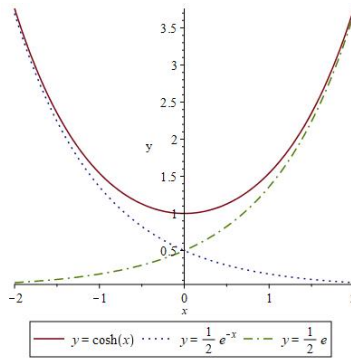
Hyperbolic Tangent
$y = \tanh(x)$

$$y = \tanh(x) = \frac{sinh(x)}{cosh(x)}$$

$y = \sinh(x)$ ······ $y = \frac{1}{2} e^x$ —·— $y = -\frac{1}{2} e^{-x}$

$y = \cosh(x)$ ······ $y = \frac{1}{2} e^{-x}$ —·— $y = \frac{1}{2} e$
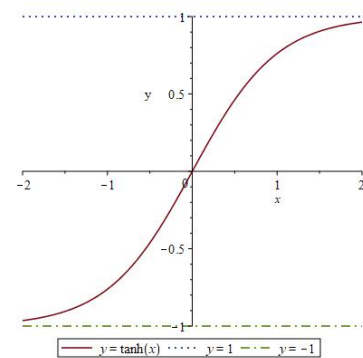
$y = \tanh(x)$ ······ $y = 1$ —·— $y = -1$

Hyperbolic Cosecant
$y = \text{csch}(x)$
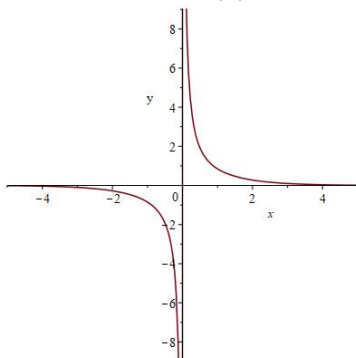
$$\text{csch}(x) = \frac{1}{\sinh(x)}$$

Hyperbolic Secant
$y = \text{sech}(x)$
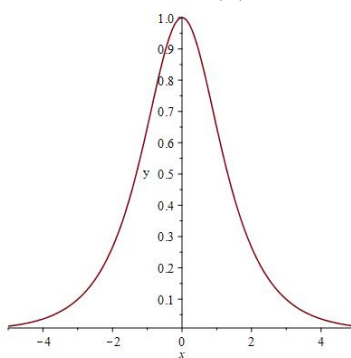
$$\text{sech}(x) = \frac{1}{\cosh(x)}$$

Hyperbolic Cotangent
$y = \coth(x)$

$$\coth(x) = \frac{\cosh(x)}{\sinh(x)}$$