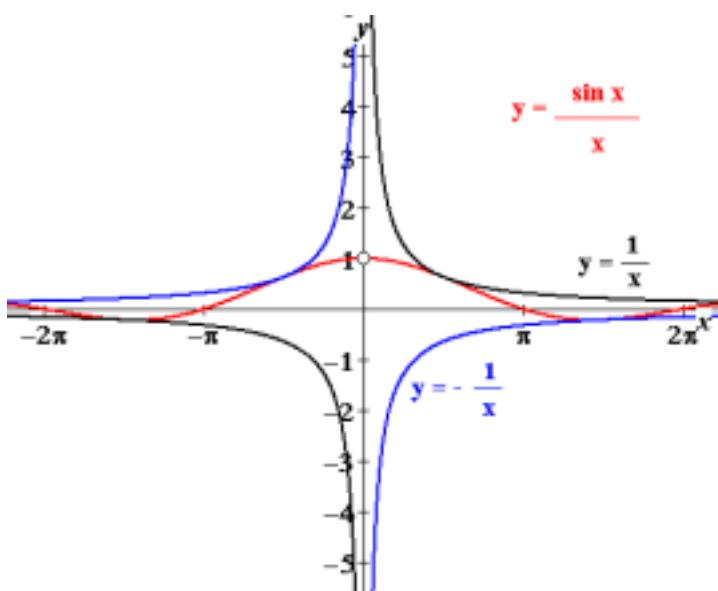


Limits



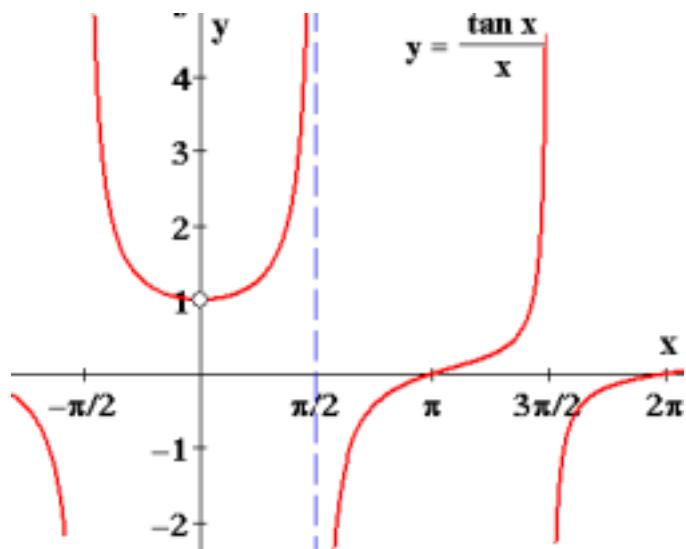
Envelope: $y = \pm \frac{1}{x}$

(1) The curve is symmetric about y axis.

(2) $\lim_{x \rightarrow 0} \frac{\sin x}{x} = 1$

$$\lim_{x \rightarrow \pm\infty} \frac{\sin x}{x} = 0$$

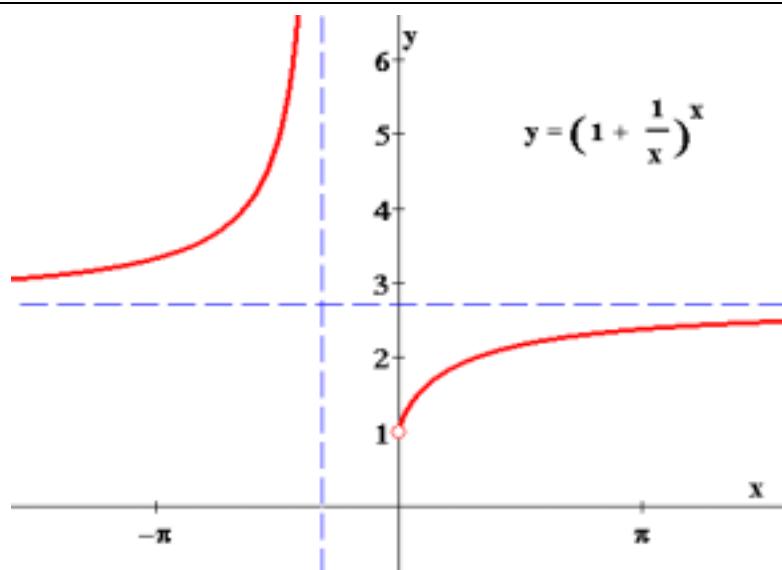
(3) $\lim_{x \rightarrow 0} \frac{\sin mx}{nx} = \frac{m}{n}$



(1) The curve is symmetric about y axis.

(2) $\lim_{x \rightarrow 0} \frac{\tan x}{x} = 1$

(3) $\lim_{x \rightarrow \frac{\pi}{2}^{\pm 0}} \frac{\tan x}{x} = \mp\infty$



(1) Asymptotes:

$$y = e \quad \text{and} \quad x = -1$$

(2) $\lim_{x \rightarrow \infty} \left(1 + \frac{1}{x}\right)^x = e$

$$\lim_{x \rightarrow 0+} \left(1 + \frac{1}{x}\right)^x = 1$$

$$\lim_{x \rightarrow (-1)^-} \left(1 + \frac{1}{x}\right)^x = +\infty$$

<p>A graph of the function $y = \frac{\ln x}{x}$ on a Cartesian coordinate system. The x-axis is labeled from 0 to 5, and the y-axis is labeled from -2 to 1. The curve starts from negative infinity as $x \rightarrow 0^+$, reaches a local maximum at point A (approximately 18.1, -0.18), crosses the x-axis at x=1, and then decreases towards the x-axis as $x \rightarrow +\infty$. An inflection point is marked at B (approximately 4.7, 0.47).</p>	<p>(1) Max Point at A $\left(e, -\frac{1}{e}\right)$</p> <p>(2) Inflexion Point at B $\left(e^{\frac{3}{2}}, \frac{3}{2}e^{-\frac{3}{2}}\right)$</p> <p>(3) Asymptotes : $y = 0$ and $x = 0$</p>
<p>A graph of the function $y = \frac{\ln(1+x)}{x}$ on a Cartesian coordinate system. The x-axis is labeled from -2 to 4, and the y-axis is labeled from -1 to 4. The curve has a vertical asymptote at $x = -1$ (indicated by a blue dashed line) and passes through the origin (0,0). It approaches the x-axis as $x \rightarrow +\infty$ and has a horizontal asymptote at $y = 1$ as $x \rightarrow -\infty$. A point on the curve is marked at (1, 0.37).</p>	<p>(1) Asymptotes : $y = 0$ and $x = -1$</p> <p>(2) $\lim_{x \rightarrow 0} \frac{\ln(1+x)}{x} = 1$</p> <p>(3) $\lim_{x \rightarrow +\infty} \frac{\ln(1+x)}{x} = 0$</p> <p>(4) $\lim_{x \rightarrow -1^+} \frac{\ln(1+x)}{x} = +\infty$</p>

