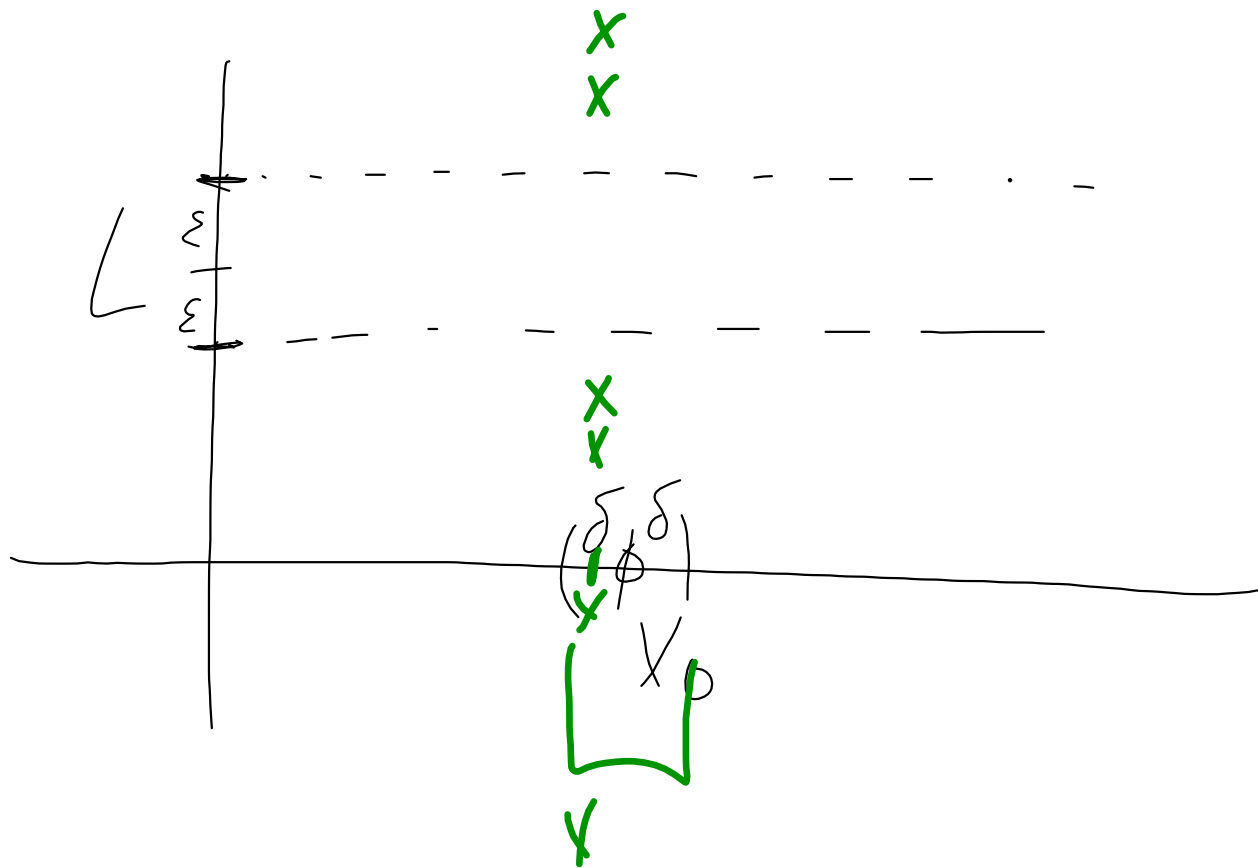
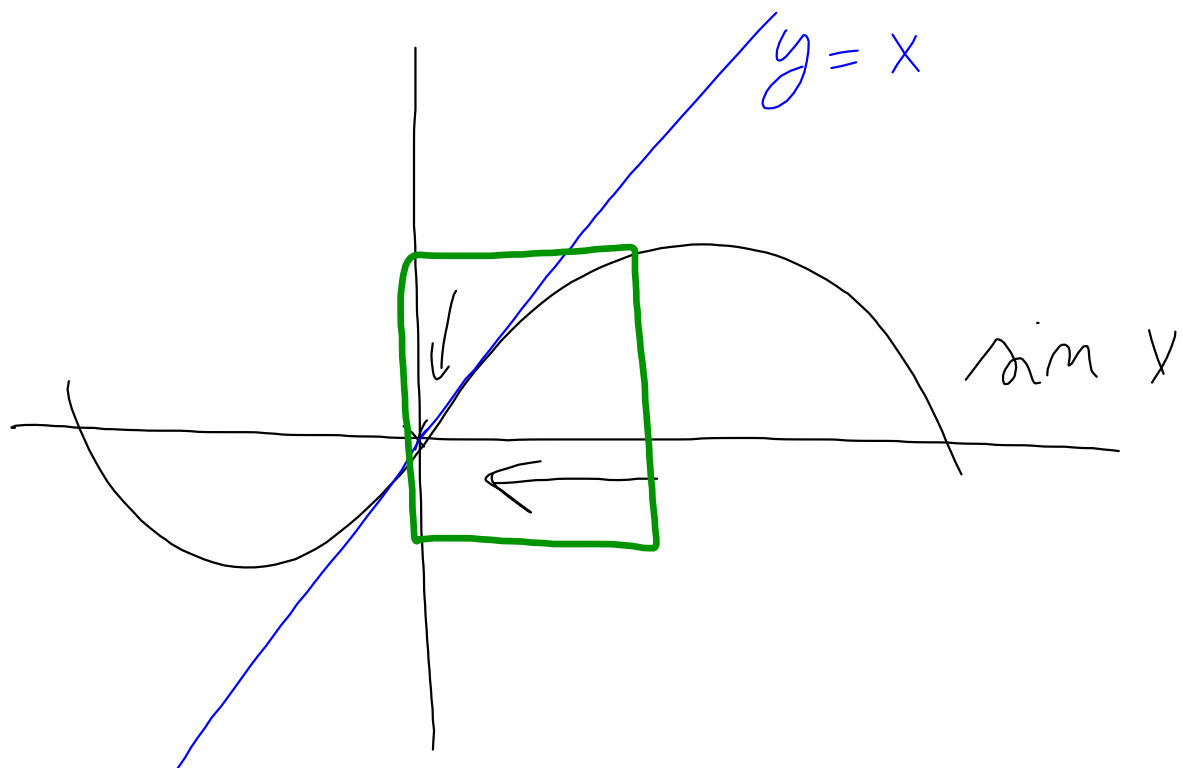


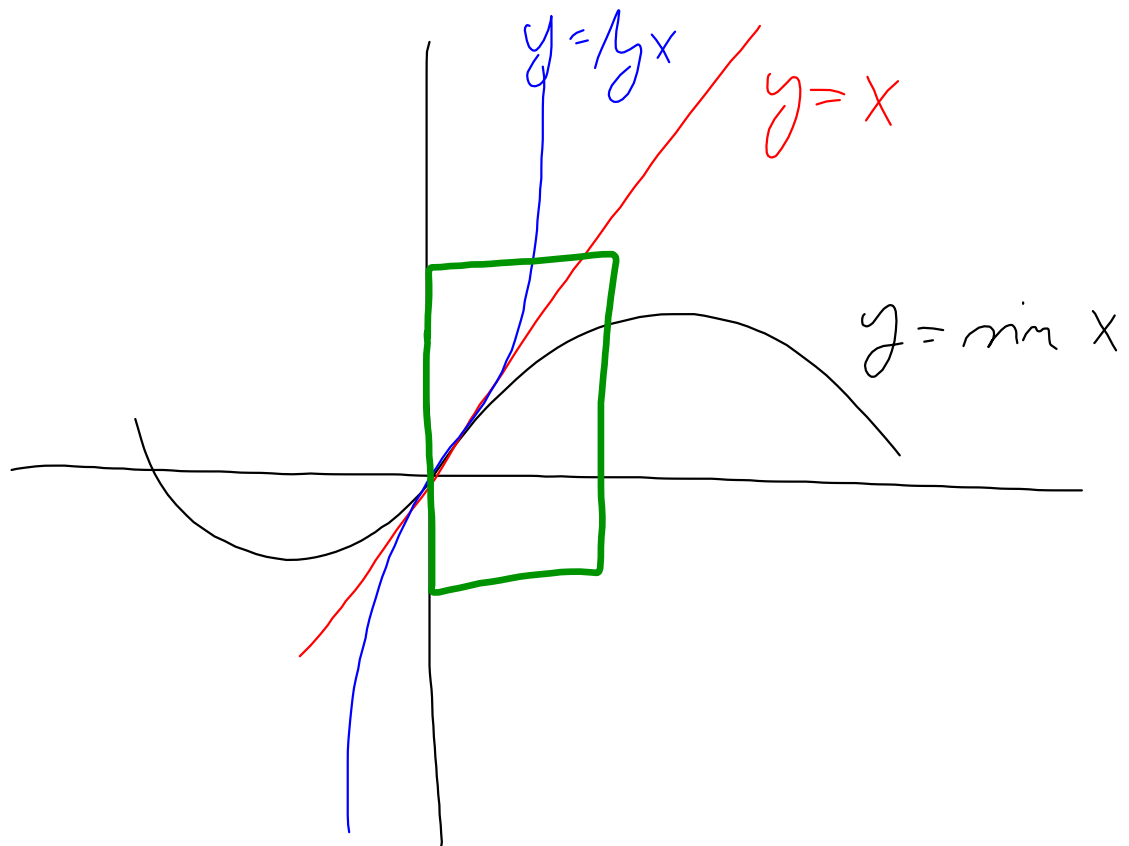
$$\neg(A \Rightarrow B) = A \wedge \neg B$$

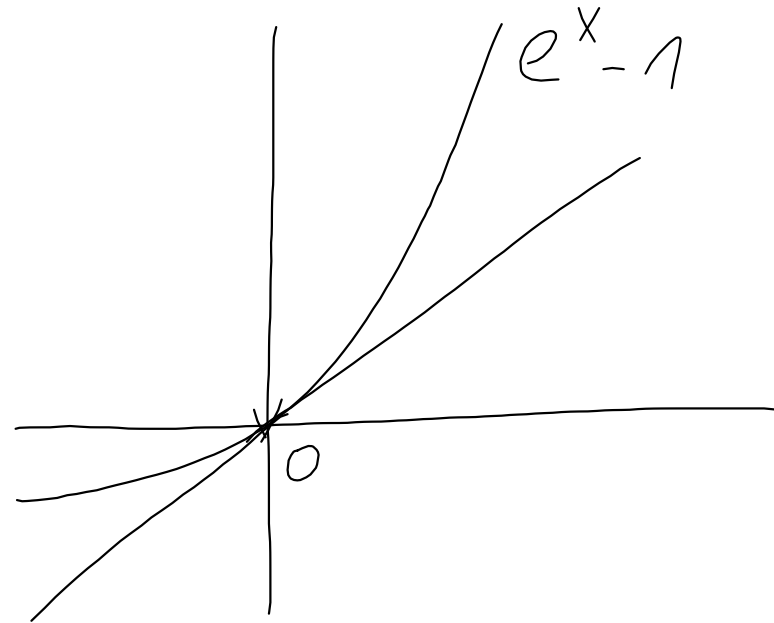
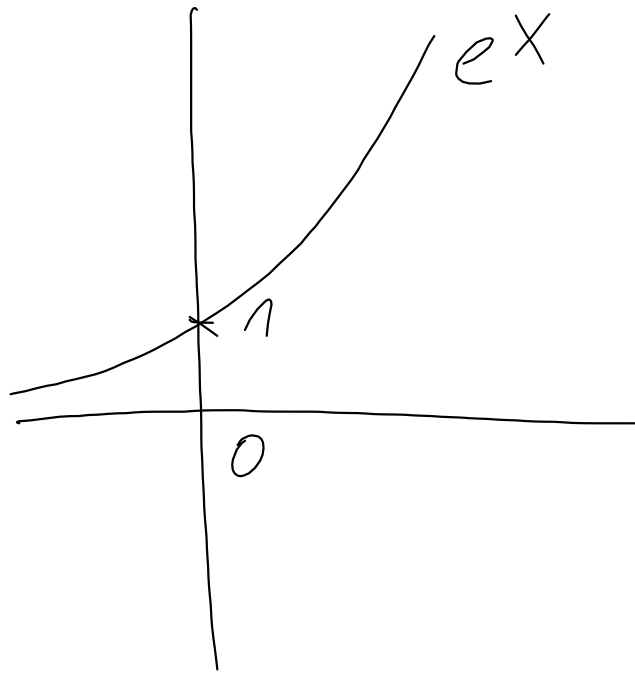




$$\cos 2t = \cos^2 t - \sin^2 t \quad \Big| \quad t = \frac{x}{2}$$

$$\sin^2 y + \cos^2 y = 1 \rightarrow \underline{\cos^2 y = 1 - \sin^2 y}$$





$$\left(1 + \frac{1}{n+1}\right)^{n+1} \nearrow e$$

$$\left(1 + \frac{1}{n}\right)^{n+1} \searrow e$$

$$\begin{array}{rcl}
 n = 1 & \frac{1}{2} & \leq x \leq 1 \\
 & \frac{1}{3} & \sim \wedge \frac{1}{2} \\
 & \frac{1}{4} & \sim \wedge \frac{1}{3} \\
 & \frac{1}{5} & \sim \wedge \frac{1}{4} \\
 & \frac{1}{6} & \sim \wedge \frac{1}{5} \\
 & \vdots & \\
 & i & \vdots
 \end{array}$$

$$\frac{1}{n} \geq 0, \quad \forall n \in \mathbb{N}$$

$$\frac{1}{n}, \quad n \rightarrow \infty \qquad \frac{1}{n} \rightarrow 0$$

$$a^x = e^{\ln a^x} = e^{x \cdot \ln a}$$

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

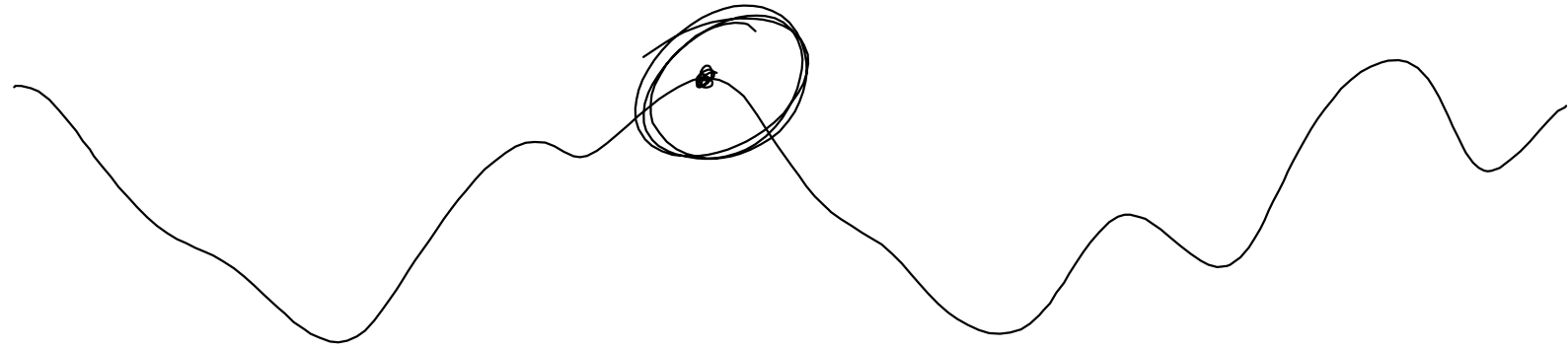
$$\lim_{x \rightarrow x_0} \frac{f(x)}{g(x)} = \left| \frac{0}{0}, \frac{\infty}{\infty} \right| = \lim_{x \rightarrow x_0} \frac{f'(x)}{g'(x)}$$

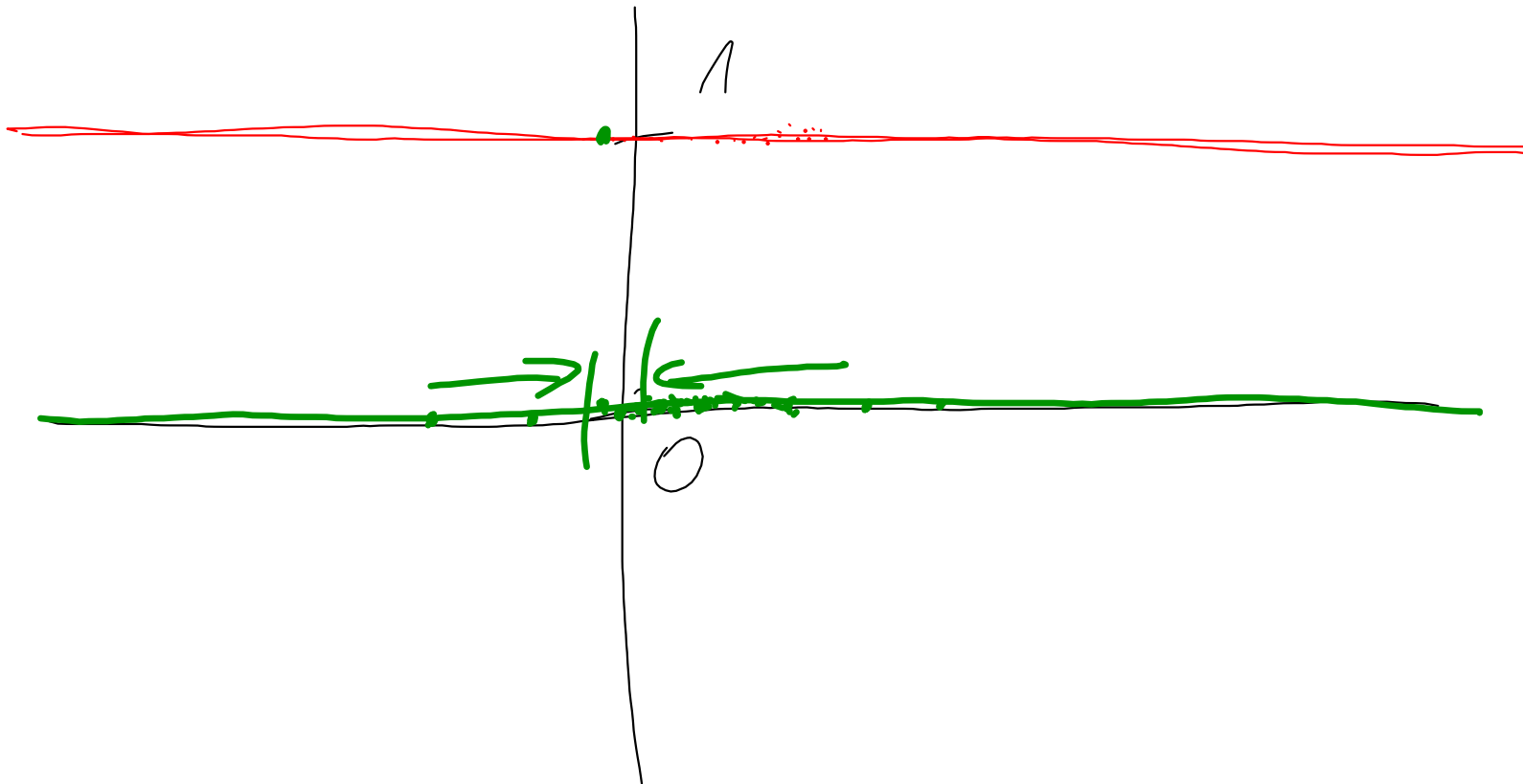
$$\lim_{x \rightarrow \infty} \frac{x + \sin x}{x + \cos x} = \left| \frac{\infty}{\infty} \right| \neq \lim_{x \rightarrow \infty} \frac{1 + \cos x}{1 - \sin x}$$

L'Hôpital's Rule

$$\lim_{x \rightarrow \infty} \frac{\cancel{x} \cdot \left(1 + \frac{\sin x}{x}\right)}{\cancel{x} \cdot \left(1 + \frac{\cos x}{x}\right)} = \lim_{x \rightarrow \infty} \frac{1 + \frac{\sin x}{x}}{1 + \frac{\cos x}{x}} = 1$$

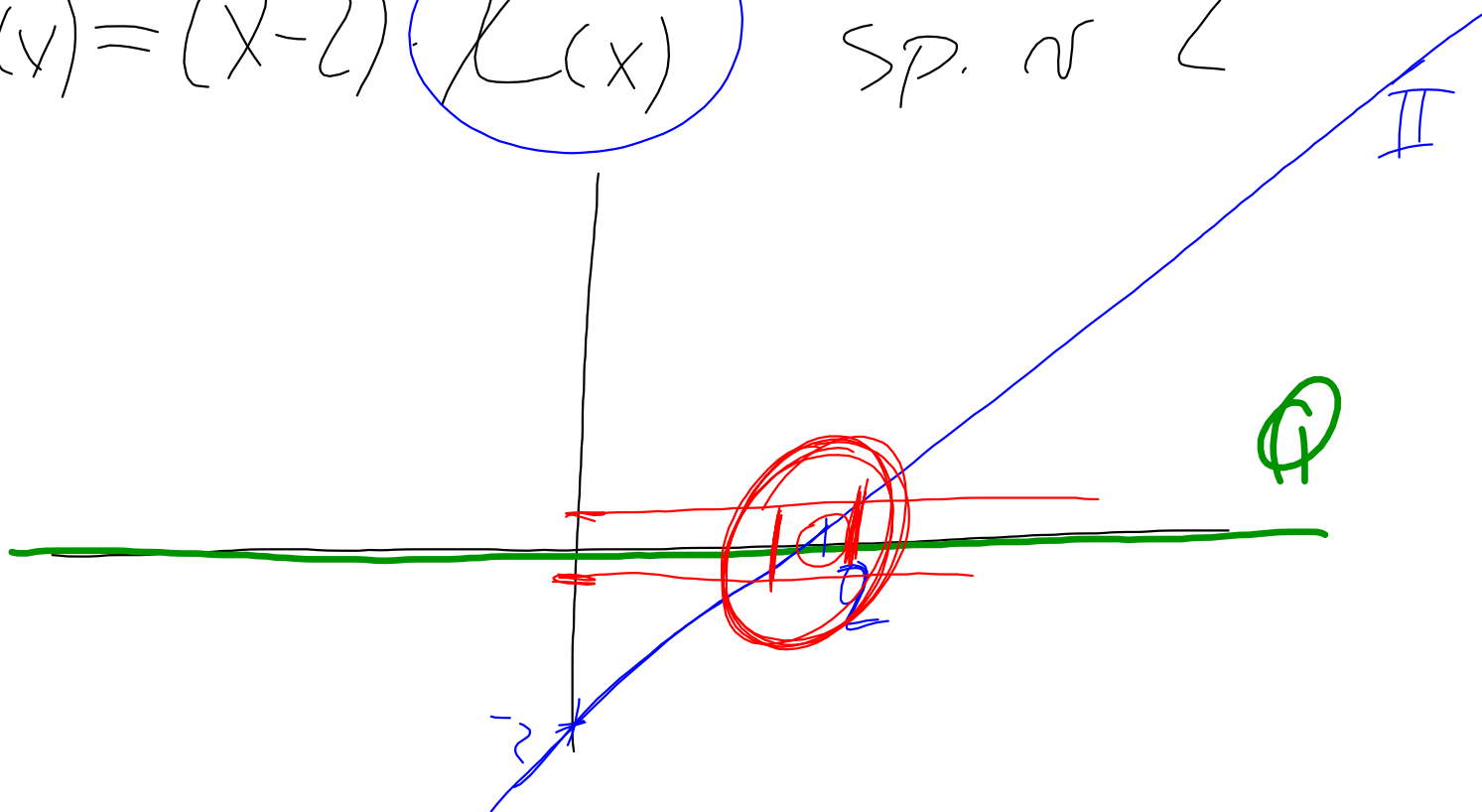
The diagram shows the step-by-step evaluation of the limit. The original expression is written in black ink. The x terms are crossed out with red lines. The limit is then simplified to $\lim_{x \rightarrow \infty} \frac{1 + \frac{\sin x}{x}}{1 + \frac{\cos x}{x}}$. The terms 1 and $\frac{\sin x}{x}$ in the numerator are circled in green, with arrows pointing to 1 and 0 respectively. Similarly, the terms 1 and $\frac{\cos x}{x}$ in the denominator are circled in green, with arrows pointing to 1 and 0 respectively. The final result $= 1$ is underlined in green. Below the denominator's $\frac{\cos x}{x}$ term, the text "O/R." is written above ∞ , with an arrow pointing to 0 .





$$f(x) = (x-2) \cdot \mathcal{K}(x) \quad = 1 \quad (x \in \text{II})$$

SP. v 2



$$\lim_{x \rightarrow x_0} (\sin x) = \sin x_0$$

$$\lim_{x \rightarrow x_0} [\sin x - \sin x_0] = 0$$

$$\lim_{x \rightarrow x_0} \sin x - \lim_{x \rightarrow x_0} \sin x_0$$