

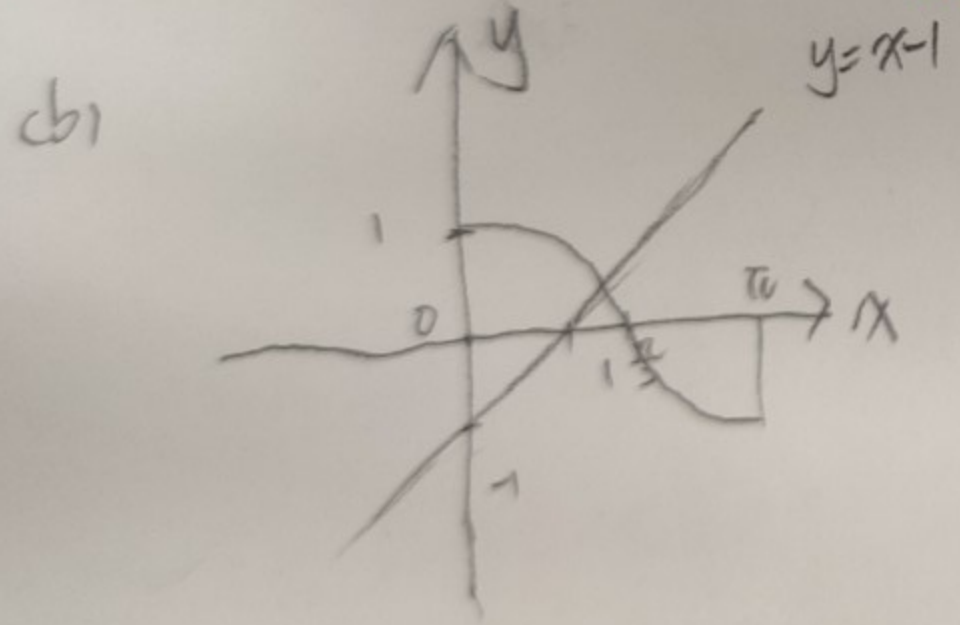
$$\Rightarrow \cos \left(\lim_{\theta \rightarrow 0} \left(\frac{\sin(1-\cos\theta)}{1-\cos\theta} \right) \times (1-\cos\theta) \times \frac{\cos^2\theta}{\sin^2\theta} \right)$$

$$\Rightarrow \cos \left(\lim_{\theta \rightarrow 0} \frac{1-\cos\theta}{\sin^2\theta} \right)$$

$$= \cos \left(\lim_{\theta \rightarrow 0} \frac{1-\cos\theta}{(1-\cos\theta)(1+\cos\theta)} \right)$$

$$= \cos \left(\frac{1}{1 + \lim_{\theta \rightarrow 0} \cos\theta} \right) = \cos \frac{1}{2} \neq$$

3. (a) If $f(x)$ is continuous on (a, b) and $f(a) > 0$ $f(b) < 0$ there exist $c \in (a, b)$ and $f(c) = 0$.



Let $f(x) = y = \cos x - x + 1$. Check continuity.

$$f(1) = \cos 1 > 0$$

$$f(2) = \cos 2 - 1 < 0 \quad (\because \cos 2 < 1)$$

By — ?
find $c \approx 1$