2.3 ㊸ $\lim_{x \to 1} \frac{1}{x} = 1$

For any $\varepsilon > 0$ $1 > \varepsilon > 0$

$\left| \frac{1}{x} - 1 \right| < \varepsilon$

$\Leftrightarrow -\varepsilon < \frac{1}{x} - 1 < \varepsilon$

$\Leftrightarrow 1 - \varepsilon < \frac{1}{x} < 1 + \varepsilon$

$\Leftrightarrow \boxed{\frac{1}{1-\varepsilon}} > x > \frac{1}{1+\varepsilon}$

$\Leftrightarrow \frac{1}{1-\varepsilon} - 1 > x - 1 > \frac{1}{1+\varepsilon} - 1$

$\Rightarrow \delta = \min \left\{ \cancel{\frac{1}{1+\varepsilon}} - 1 , \frac{1}{1-\varepsilon} - 1 \right\}$

take $\delta = \frac{1}{1+\varepsilon} - 1$

$= \frac{1 - 1 - \varepsilon}{1+\varepsilon}$

$= \frac{-\varepsilon}{1+\varepsilon}$