

MON

TUE

WED

THU

FRI

SAT

SUN

DATE:

NO.:

SUBJECT:

43. $\lim_{x \rightarrow 1} \frac{1}{x} = 1$

for any $\epsilon > 0$, there exists $\delta > 0$

$$0 < |x-1| < \delta \Rightarrow \left| \frac{1}{x} - 1 \right| < \epsilon$$

$$\Rightarrow -\epsilon < \frac{1}{x} - 1 < \epsilon$$

$$\Rightarrow \frac{1}{x} > 1 - \epsilon$$

$$\Rightarrow \frac{1}{1-\epsilon} < x$$

$$\Rightarrow \frac{1}{1-\epsilon} < x < \frac{1}{1-\epsilon} + \epsilon$$

$$\Rightarrow \frac{1}{1-\epsilon} < x < \frac{1}{1-\epsilon} + \epsilon$$

take $\delta = \min \left(\frac{\epsilon}{1-\epsilon}, \frac{\epsilon}{1-\epsilon} \right)$

$$\Rightarrow 0 < |x-1| < \delta \Rightarrow \left| \frac{1}{x} - 1 \right| < \epsilon$$