

Quiz
October 24, 2007

Solutions of all problems must be accompanied by relevant explanations.

Problem 1. Simplify $\left(\frac{1}{2}\right)^{\log_2 x}$.

Problem 2. Find the limits:

a) $\lim_{x \rightarrow -\infty} \frac{1}{(e-2)^x}$

b) $\lim_{x \rightarrow 0} 4^{\frac{1}{x+1}}$

Problem 3. Show that any $x > 2$ satisfies

$$\log_2 \left(1 - \frac{1}{x-1}\right) + \log_2 \left(1 - \frac{1}{x}\right) = \log_2 \left(1 - \frac{2}{x}\right)$$