THE CHINESE UNIVERSITY OF HONG KONG

DEPARTMENT OF MATHEMATICS

MATH1520C University Mathematics for Applications 2014-2015

Assignment 1

- Due date: 29 Jan, 2015 (before 17:00)

- Remember to write down your name and student number

Exercise 1.5: 23, 25, 59

Exercise 1.6: 27, 57

1. Find $\lim\limits_{x \to +\infty} \dfrac{e^x - 2}{e^{2x} - 4}$.

2. If $f(x) = \begin{cases} e^{2x} & \text{if} \quad x > 0, \\ 0 & \text{if} \quad x = 0 \\ 1 & \text{if} \quad x < 0. \end{cases}$

   (a) What is the value of $f(0)$?

   (b) Find $\lim\limits_{x \to 0^-} f(x)$, $\lim\limits_{x \to 0^+} f(x)$ and $\lim\limits_{x \to 0} f(x)$ if they exist.

   (c) Is $f(x)$ continuous at $x = 0$?