MATH 15100 HOMEWORK

DUE MONDAY, OCTOBER 8, 2018

1. PROBLEM 1

Determine where the function
$$f(x) = \begin{cases} \frac{x^2-1}{x-1}, & \text{for } x < 0 \\ \\ \frac{x-2}{x^2-2}, & \text{for } x \geq 0 \end{cases}$$
is continuous. Show your work

2. PROBLEM 2

Compute the following limits.

(1) $\displaystyle\lim_{x \to 0} \frac{\sin(7x)}{3x}$

(2) $\displaystyle\lim_{x \to 0} \frac{1 - \cos(x) + \sin(x)}{x}$

(3) $\displaystyle\lim_{x \to 0} \frac{1 - \cos(x^2)}{x^4}$