

AMAT8111 HOMEWORK No 2

(GROUPS A, B,C,D,F)

(To be submitted on Thursday, 24th April)

I. Graph the functions

a) $f(x) = \sqrt{|x-1|} - 1$ b) $g(x) = \frac{e^{x^2 + \sin^2(x-1)}}{x+1}$

II. Find the following limit

a) $\lim_{x \rightarrow 0} \left(\frac{3-5x}{3+5x} \right)^{1/x}$ b) $\lim_{x \rightarrow 0} \left(\frac{6^{2x} - 1}{4^{3x} - 1} \right)$ c) $\lim_{x \rightarrow 0} \frac{\sqrt{1+x+x^2} - 1}{x}$

III. Discuss the continuity of functions below at indicated x value.

a) $f(x) = \begin{cases} \sin(x^2), & x \leq 0 \\ x \sin(1/x), & x > 0 \end{cases}, \text{ at } x = 0$

b) $g(x) = \frac{x^4 - 3x^3 + 2x + 1}{x^2 - 4}, \text{ at } x = 2$
