King **F**ahd **U**niversity for **P**etroleum and **M**inerals
Department of Mathematics & Statistics
Term 152 Math 101 (14) Quiz#1 (2.2, and 2.3)
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Q1. If $f(x)=\begin{cases} \frac{1}{|x|}+\frac{1}{x} & ,\text{if} \quad x<0 \\ 3 & ,\text{if} \quad x=0 \\ \left[\!\left[\frac{6}{2+x} \right]\!\right] & ,\text{if} \quad 0<x<2 \\ \frac{\sqrt{x^2+5}-3}{x-3} & ,\text{if} \quad x>2 \end{cases}$, Where $[\![y]\!]$ is the greatest integer less than or equal to y. Evaluate each limit if it is exist and explain if it is not:

i. $\lim_{x\to 0^-} f(x)$

ii. $\lim_{x\to 1^+} f(x)$

iii. $\lim_{x\to 3} f(x)$