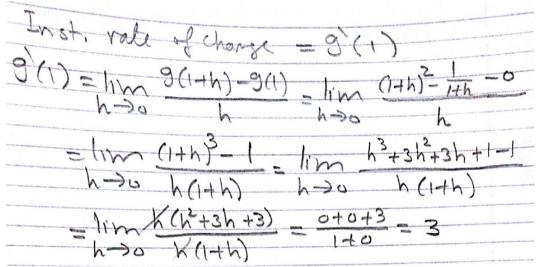
MATH-101 Term-131 IN-Class-QUIZ-3

1) Let $y = g(x) = x^2 - \frac{1}{x}$. Use limits to find the instantaneous rate of change of y with respect to x at x = 1.



2) For what values of a, b, and c is f(x) continuous on the closed interval [2, 4].

$$f(x) = \begin{cases} c & \text{if } x = 2\\ ax - b & \text{if } 2 < x < 3\\ 2 & \text{if } x = 3\\ \frac{a}{3}x + b & \text{if } 3 < x \le 4 \end{cases}$$

For f(x) to be cent. on [2,4] we need; (**) f(x) cont. at x=3(**) f(x) cont. from right at end point x=2This means! (1) $\lim_{x\to 3+} f(x) = 2 \rightarrow a+b=2$ $\Rightarrow b=1$ (2) $\lim_{x\to 3-} f(x) = 2 \rightarrow 3a-b=2$ $\Rightarrow b=1$ (3) $\lim_{x\to 2+} f(x) = C \rightarrow 2a-b=C \Rightarrow C=1$ $x\to 2+$ f=2 f=2 f=2f=2