Math 3333   Name:

Quiz 7

Please, write clearly and justify all your statements to get credit for your work.

(1a)[2 Pts] Let
$$h(x) = \frac{x^2 + 3x + 2}{x + 2}$$
Is h continuous at $x = -2$? Justify your answer.

(1b)[2 Pts] Let
$$f(x) = \begin{cases} \frac{x^2+3x+2}{x+2} & \text{if } x \neq -2 \\ 0 & \text{if } x = -2. \end{cases}$$
Prove that f is discontinuous at $x = -2$.

(1c)[2 Pts] Define a so that g below will be continuous at $x = -2$. Prove the continuity at at $x = -2$.
$$g(x) = \begin{cases} \frac{x^2+3x+2}{x+2} & \text{if } x \neq -2 \\ a & \text{if } x = -2. \end{cases}$$

(2)[2 Pts] Determine a bound δ independent of x such that $|x - 2| < \delta$ implies
$$|x^2 - 4| < 0.01.$$