MATH-241 Calculus I
Worksheet 01

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Last name: _____
First name: _____
Section: _____

Question:	1	2	Total
Points:	20	20	40
Score:			

Instructions: You must answer all the questions below and give your solutions to the TA at the end of the recitation. Write your solutions on a different sheet of paper. No late worksheet will be accepted.

Question 1 **(20 pts)**

Which of the following functions are continuous? If it is not continuous, give the discontinuities of the function. Explain all your answers.

(a) (5 points) $f(x) = \begin{cases} x+2 & x < 0 \\ 2x^2 & 0 \leq x \leq 1 \\ 2-x & x > 1. \end{cases}$

(b) (5 points) $f(x) = (x + 2x^3)^4$.

(c) (5 points) $f(x) = \sin\sqrt{x}$.

(d) (5 points) $f(x) = \frac{1}{1+\cos(x)}$.

Question 2 **(20 pts)**

Use the continuity to evaluate the limits. Explain all your answers (expecially why you can use continuity).

(a) (5 points) $\lim_{x\to 0} \frac{\sin x+\cos x}{(x-1)(x^2+1)}$

(b) (5 points) $\lim_{x\to \pi} \sin(x + \sin x)$.

(c) (5 points) $\lim_{x\to 20} \frac{x-19}{\sqrt{x+5}}$.

(d) (5 points) $\lim_{x\to -2} \frac{x+2}{\sin(\frac{\pi x}{2})}$.