Instructions: Complete this to the best of your ability. If you still do not understand the topics after the class lecture, seek help. The MaRCS tutoring center in the library room 218 is free for all UTEP students. My office hours are also available: Monday 9 – 10 am, Tuesday/Thursday 10:45 am – 11:45 am in Bell Hall 322. **All work should be on this sheet.**

Using complete sentences, explain why each of the following is incorrect.

1. $\lim_{x \to -2} \dfrac{x^2 + 3x + 2}{x + 2} = x + 1 = -1$.

    This is not a true statement for all x.

    Correct: $\lim_{x \to -2} \dfrac{x^2 + 3x + 2}{x + 2} = \lim_{x \to -2} (x + 1) = -1$

2. $f(x) = \dfrac{1}{3}x^2 + \dfrac{1}{5}x - 7$ has derivative $f'(x) = 0.6x + 0.2$.

    $f'(x) = \dfrac{1}{3}(2x) + \dfrac{1}{5} - 0$

    $f'(x) = \dfrac{2}{3}x + \dfrac{1}{5}$

    The problem is that $\dfrac{2}{3} \neq 0.6$ Do not round unless clearly stated.

    Note: $\dfrac{1}{5} = 0.2$ so that isn't an issue.

3. To find $\lim_{x \to 1} (x^3 + 7x^2 - x + 10)$ we use L'Hospital's rule and find $\lim_{x \to 1} (3x^2 + 14x - 1)$.

    only applies when a limit is equal to $\dfrac{0}{0}$ or $\dfrac{\infty}{\infty}$. This does not even have a denominator!