ACMAT161 Summer 2024
Professor Manguba-Glover
Homework 19 Name: _____

Show all work, simplify, and box your answers. If you do the problem incorrectly, or don't show sufficient work, you will be asked to rewrite the problem for full credit.

Due next class. Students who turn assignments in late (or do not attempt a problem) forfeit their ability to rewrite those problems for credit.

1. Evaluate $\lim_{x\to\infty} \dfrac{x^2+8}{6x^2-x}$
2. Evaluate $\lim_{x\to 1} \dfrac{x^2-1}{x-1}$
3. Evaluate $\lim_{x\to 0} \dfrac{1-\cos x}{x^2}$
4. Evaluate $\lim_{x\to 1} \dfrac{x^2-2x+1}{x^2-3x-4}$
5. Evaluate $\lim_{x\to\infty} \dfrac{3x^2-100x+2}{4x^2+4x-1000}$
6. Evaluate $\lim_{x\to\frac{\pi}{2}} \left(x-\dfrac{\pi}{2}\right)\tan x$ $\left(\text{Recall: } \frac{1}{\tan x} = \cot x\right)$
7. Evaluate $\lim_{x\to 0^+} xe^{1/x}$
8. Evaluate $\lim_{x\to\infty} (xe^{1/x}-x)$ (Hint: factor out x first and then this problem is similar to the previous one)
9. Evaluate $\lim_{x\to\infty} x^{5/x}$
10. Evaluate $\lim_{x\to 0^+} (e^{2x}-1)^{1/\ln x}$