ACMAT161 Summer 2024
Professor Manguba-Glover
Classwork 5 & 6 Name: _____

Complete as many of the following problems as you can with your table in the allotted time. You do not have to go in order.

Classwork 5

1. Find $\lim_{x\to -5^-} \dfrac{3x}{2x+10}$ and $\lim_{x\to -5^+} \dfrac{3x}{2x+10}$. What does this say about $\lim_{x\to -5} \dfrac{3x}{2x+10}$?
2. Find $\lim_{x\to 5^+} \dfrac{x+1}{x-5}$
3. Find $\lim_{x\to 1} \dfrac{x-2}{(x-1)^2}$
4. Find $\lim \dfrac{1}{x^2-4}$ as $x \to 2$ and $x \to -2$
5. Find the vertical asymptotes for $y = \frac{2x^2}{x^2-1}$ then determine the functions behavior around them.
6. Find the vertical asymptotes of $\frac{x^2-3x+2}{x^3-4x}$ and determine the functions behavior around them.

Key:

1. ∞, $-\infty$, it DNE
2. ∞
3. $-\infty$
4. DNE for both
5. $x = 1$ and $x = -1$,
   check your limit answers with graphing utility
6. $x = 0$ and $x = -2$,
   check your limit answers with graphing utility

Classwork 6

1. Find $\lim_{x\to\infty}(x^2 - x)$
2. Evaluate $\lim_{x\to\infty}\dfrac{3x^2 - x - 2}{5x^2 + 4x + 1}$
3. Find $\lim_{x\to\infty}\dfrac{x^2 + 8}{6x^2 - x}$
4. Find $\lim_{x\to\infty}\dfrac{\pi\sqrt{2}}{x^3}$
5. Find $\lim_{x\to\infty}\dfrac{x + 5}{x^3 + 7x^2 + 1}$
6. Find $\lim_{x\to-\infty}\dfrac{x^4 + 3x^3 + x - 1}{x + 1}$
7. Find the end behavior of $f(x) = \frac{x^2-1}{x^2+1}$ to determine the horizontal asymptote(s)
8. Determine if there is an asymptote for $f(x) = \frac{x^2+x}{3-x}$
9. Determine the asymptotes of $f(x) = \frac{x^3}{x^2+1}$

Key:

1. ∞
2. $\frac{3}{5}$
3. $\frac{1}{6}$
4. 0
5. 0
6. $-\infty$
7. $y = 1$
8. $y = -x - 4$
9. $y = x$