Math 1552 Summer 2023 **Name (Print):** _____
Quiz 4 Practice June 15

Teaching Assistant/Section: _____

By signing here, you agree to abide by the **Georgia Tech Honor Code**: *I commit to uphold the ideals of honor and integrity by refusing to betray the trust bestowed upon me as a member of the Georgia Tech Community.*

Sign Your Name: _____

Please clearly organize your work, show all steps, simplify all answers, and BOX your answers.

1. (4 points) Find a general formula a_n for the n-th term of the sequence. You do not need to show work on this problem but please put your final answer in the box.

   Hint: be sure to include your starting value for n.

   $$\frac{1}{2}, \frac{-5}{6}, \frac{9}{24}, \frac{-13}{120}, \frac{17}{720}, \ldots$$

2. (10 points) Evaluate the improper integral.

   $$\int_2^\infty \frac{2}{t^2-1}\, dt$$

3. (6 points) For each sequence, determine the limit of the sequence as n tends to infinity. If the limit diverges, write either DNE, ∞ DNE, or $-\infty$ DNE in the box, as appropriate. You do not have to show your work for problems on this page, but please put your final answer in the box.

(a) $\left\{\left(1+\frac{2}{n}\right)^{-n}\right\}$

(b) $\left\{\frac{(-1)^n n!}{4^n}\right\}$

(c) $\left\{\frac{\ln\left(\frac{1}{n}\right)}{n^2}\right\}$