Math 1552 Summer 2023 **Name (Print):** _____
Quiz 6 July 13
Time limit: 20 Minutes Teaching Assistant/Section: _____

GT ID: | | | | | | | | | |

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. (5 points) Find the interval I and radius R of convergence of the given power series. For the interval of convergence, give your answer using interval notation or using inequality notation.

   $$\sum_{n=1}^{\infty} \frac{\sqrt{n}x^n}{3^n}$$

   $I =$ _____

   $R =$ _____

2. (5 points) Find the Taylor series expansion of $f(x)$ at $x = 0$ for the given function. If you use a known (common) Taylor series, please carefully state the known series that you are using as part of your work.

   $$f(x) = \frac{4x}{1+x^3}$$

   $f(x) =$ _____

3. (10 points) Determine if the given alternating series converges absolutely, converges conditionally, or diverges.

(a) $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n}{\sqrt{n^3+1}}$

(b) $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^n n!}{3^n}$