Section 8.3, Part 3: Series Tests Practice

Problems for Group Work:

Be sure to fully justify your reasoning as a part of your solutions.
The answers are upside-down on the bottom of this page.

For Problems 1-**??**, determine whether the series is convergent, divergent, or if we cannot determine the convergence behavior using the tests we know at this point.
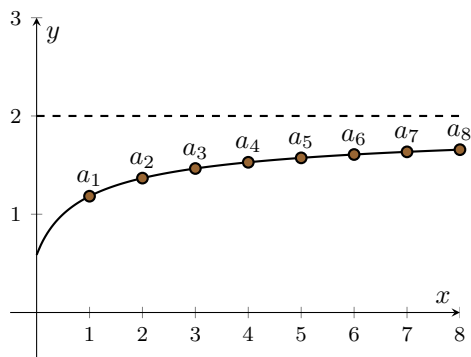
1. $\displaystyle\sum_{n=1}^{\infty} \frac{1}{n^2 + 1}$

2. $\displaystyle\sum_{n=1}^{\infty} \frac{n}{n^2 + 1}$

3. $\displaystyle\sum_{n=1}^{\infty} \frac{\cos(n)\sqrt{n}}{3n + 4}$

4. $\displaystyle\sum_{n=1}^{\infty} \int_{n}^{n+1} \frac{dx}{x^{2/3}}$

5. $\displaystyle\sum_{n=1}^{\infty} 2^{-n} a_n$, where $a_n = f(n)$ as shown below:

Answers:

Problem 1: Converge, **Problem 2:** Diverge, **Problem 3:** Cannot Determine, **Problem 4:** Diverge,
Problem ??: Converge,