MATH 104 TUTORIAL 10

1. Find a formula for the nth partial sum of the series and use it to find the series' sum if the series converges.

$$\frac{1}{2\cdot 3}+\frac{1}{3\cdot 4}+\frac{1}{4\cdot 5}+\cdots+\frac{1}{(n+1)(n+2)}+\cdots$$

2. Find the sum of the series.

a. $\sum_{n=0}^{\infty}(-1)^n\frac{5}{4^n}$ b. $\sum_{n=0}^{\infty}\left(\frac{5}{2^n}+\frac{1}{3^n}\right)$

3. Use the nth term test for divergence to show that the series is divergent, or state that the test is inconclusive.

a. $\sum_{n=1}^{\infty}\frac{n(n+1)}{(n+2)(n+3)}$ b. $\sum_{n=1}^{\infty}\frac{n}{n^2+3}$

4. Find a formula for the nth partial sum of the series and use it to determine if the series convergens or diverges. If the series converges, find its sum.

a. $\sum_{n=1}^{\infty}\left(\frac{3}{n^2}-\frac{3}{(n+1)^2}\right)$ b. $\sum_{n=1}^{\infty}\left(\sqrt{n+4}-\sqrt{n+3}\right)$

5. Use the integral test to determine if the series converge or diverge.

a. $\sum_{n=1}^{\infty}\frac{1}{n^2}$ b. $\sum_{n=1}^{\infty}\frac{n}{n^2+4}$ c. $\sum_{n=2}^{\infty}\frac{n-4}{n^2-2n+1}$

6. Determine if the series converge or diverge.

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

b. $\sum_{n=1}^{\infty}\frac{-2}{n\sqrt{n}}$