Math 199 CD3 Merit Worksheet 12: Starting of Series (Welcome to my research :)

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Decide whether these series diverge or converge. If the series converge, try to find its value

1.
$$\sum_{n=0}^{\infty} \frac{(-1)^n}{3^n}$$

2.
$$\frac{1}{1 \times 2} + \frac{1}{2 \times 3} + ... + \frac{1}{n(n+1)} + ...$$

3.
$$\frac{1}{1 \times 3} + \frac{1}{3 \times 5} + ...$$

This is a bit tricky, but try, it's pretty interesting

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

5.

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

6.

$$\sum_{n=1}^{\infty} \frac{1}{\sqrt{n} + \sqrt{n-1}}$$

7.

$$\sum_{n=1}^{\infty} \ln \frac{n}{n+1}$$