Math 100 - Week 9 Recitation (Fall 2013)

For each problem, part (a) is a series with positive terms; determine whether it CONVERGES or DIVERGES. Part (b) is a series with terms that are not all necessarily positive; determine whether it CONVERGES CONDITIONALLY, CONVERGES ABSOLUTELY, or DIVERGES.

To determine your recitation grade, your group should turn solutions (with work/explanation) to both parts of three problems. The sum of the problem numbers for the three problems you choose to turn in must be at least 10. Beyond that, the choice is yours.

1. (a)
$$\sum_{n=1}^{\infty} \frac{1}{3n^2 + 1}$$
(b)
$$\sum_{n=1}^{\infty} (-1)^n \frac{1}{3n^2 + 1}$$
2. (a)
$$\sum_{n=1}^{\infty} \frac{1}{3\sqrt{n} + 1}$$
(b)
$$\sum_{n=1}^{\infty} (-1)^n \frac{1}{3\sqrt{n} + 1}$$
3. (a)
$$\sum_{n=1}^{\infty} \frac{n!}{3^n(n+3)!}$$
(b)
$$\sum_{n=1}^{\infty} (-1)^n \frac{n!}{3^n(n+3)!}$$
4. (a)
$$\sum_{n=1}^{\infty} \frac{(n!)^2}{3^n(n+3)!}$$
(b)
$$\sum_{n=1}^{\infty} (-1)^n \frac{(n!)^2}{3^n(n+3)!}$$
5. (a)
$$\sum_{n=1}^{\infty} \frac{(2n^2 + 1)^{3n}}{(3n^3 + 1)^{2n}}$$
(b)
$$\sum_{n=1}^{\infty} (-1)^n \frac{(2n^2 + 1)^{3n}}{(3n^3 + 1)^{2n}}$$
6. (a)
$$\sum_{n=1}^{\infty} \frac{1}{7^n n}$$
(b)
$$\sum_{n=1}^{\infty} (-7)^n \frac{1}{7^n n}$$
7. (a)
$$\sum_{n=1}^{\infty} \frac{\sqrt{n^9 + 4}}{7^n n}$$
(b)
$$\sum_{n=1}^{\infty} (-2)^{3n} \frac{\sqrt{n^9 + 4}}{7^n n}$$