

# AUC apCalculus BC

## Assignment 10

PROBLEM 7.1. Study the convergence of the following series:

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|---|---|
| (1) $\sum_{n=1}^{+\infty} \frac{1}{(2n+13)^5}.$                                 | (5) $\sum_{n=1}^{+\infty} \frac{e^{2n}}{(n+1)!}.$               |
| (2) $\sum_{n=1}^{+\infty} \frac{5 \cdot 7^n}{2^{3n}}.$                          | (6) $\sum_{n=1}^{+\infty} \frac{n!}{e^{2n^2}}.$                 |
| (3) $\sum_{n=1}^{+\infty} \frac{1}{n^{1.2}}.$                                   | (7) $\sum_{n=1}^{+\infty} \frac{6^n}{7^n}.$                     |
| (4) $\sum_{n=1}^{+\infty} \sin^6\left(\frac{n^2+1}{n^{2.2}+4\sin(n^n)}\right).$ | (8) $\sum_{n=1}^{+\infty} \sin^2\left(\frac{3^n}{11^n}\right).$ |

PROBLEM 7.2. Study the convergence of the following series:

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|--|--|
| (1) $\sum_{n=1}^{+\infty} \frac{1}{(3n+11)^6}.$  | (5) $\sum_{n=1}^{+\infty} \frac{e^{3n}}{(n+1)!}.$              |
| (2) $\sum_{n=1}^{+\infty} \frac{4 \cdot 7^n}{2^{3n}}.$   | (6) $\sum_{n=1}^{+\infty} \frac{n!}{e^{4n^2}}.$                |
| (3) $\sum_{n=1}^{+\infty} \frac{1}{n^{1.3}}.$  | (7) $\sum_{n=1}^{+\infty} \frac{6^n}{7^n}.$                    |
| (4) $\sum_{n=1}^{+\infty} \sin^6\left(\frac{n^3+1}{n^{3.2}+4\sin(n^n)}\right).$                          | (8) $\sum_{n=1}^{+\infty} \sin^3\left(\frac{2^n}{7^n}\right).$ |
| (8) $\sum_{n=1}^{+\infty} \frac{e^{n^2}}{(n+1)!}.$   |  |
| (9) $\sum_{n=1}^{+\infty} \sin^7\left(\frac{n^{4.2}+\sin(n^{e^n})n^3-1}{n^{6.1}+\cos(n^2)n^6+2}\right).$ |  |
| (10) $\sum_{n=1}^{+\infty} \frac{(-1)^{n^3} \sin n^{\cos(n)}}{4^n+5^n}.$                                 |  |
| (11) $\sum_{n=1}^{+\infty} \frac{(\sqrt{7})^{n^2}}{(2n+3)!}.$  |  |
| (12) $\sum_{n=1}^{+\infty} \frac{e^{n^2}}{(6n+1)!}.$   |  |