Problems - 9.1

(3) Show whether the following series converges or diverges.

$$\sum_{n=1}^{\infty} \frac{1}{n(n+2)}$$

(4) Show whether the following series converges or diverges.

$$\sum_{n=1}^{\infty} \frac{1}{n2^n}$$

(11) Prove Theorem 9.4a. Suppose $u_n \geq 0$ for all $n \in \mathbb{N}$. If $u_n \leq a_n$ for all $n \in \mathbb{N}$ and $\sum_{n=1}^{\infty} an$ converges, then $\sum_{n=1}^{\infty} u_n$ converges and $\sum_{n=1}^{\infty} u_n \leq \sum_{n=1}^{\infty} a_n$.