A. Pomocí podílového, odmocninového nebo Raabeho kritéria vyšetřete:

1.

$$\sum_{k=1}^{\infty} \frac{2^k}{k!}$$

2.

$$\sum_{k=1}^{\infty} \frac{(k!)^2}{(2k)!}$$

3.

$$\sum_{k=1}^{\infty} \frac{k^{ak}}{k!}$$

4.

$$\sum_{k=1}^{\infty} \frac{(k!)^2}{2^{k^2}}$$

5.

$$\sum_{k=1}^{\infty} \frac{k^2}{\left(\frac{\pi}{3}+\frac{1}{k}\right)^k}$$

6.

$$\sum_{k=1}^{\infty} \frac{k!}{k^{k+p}}$$

7.

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

8.

$$\sum_{k=1}^{\infty} \frac{2 \cdot 5 \cdot 8 \cdots (3k-1)}{1 \cdot 5 \cdot 9 \ldots (4k-3)}$$

9.

$$\sum_{k=1}^{\infty} \frac{p(p+1)\cdots(p+k-1)}{k!} \frac{1}{k^q}$$

10.

$$\sum_{k=1}^{\infty} \left(\frac{1 \cdot 3 \cdots (2k-1)}{2 \cdot 4 \cdots 2k} \right)^p$$

B. Pomocí srovnávacího a integrálního kritéria vyšetřete:

1.
$$\sum_{k=1}^{\infty} \frac{1}{\ln k}$$

2.
$$\sum_{k=1}^{\infty} \frac{k^2}{k^3+1}$$

3.
$$\sum_{k=1}^{\infty} \frac{2k^2+3k+4}{(2k^2+5)^2}$$

4.
$$\sum_{k=1}^{\infty} \frac{1}{\sqrt{2k+1}\sqrt{2k+3}}$$

5.
$$\sum_{k=1}^{\infty} \frac{\sqrt{k+2}-\sqrt{k-2}}{k^a}$$

6.
$$\sum_{k=1}^{\infty} (k^{k^a}-1)$$

7.
$$\sum_{k=1}^{\infty} (k^{(k^2+1)^{-1}}-1)$$

8.
$$\sum_{k=1}^{\infty} \mathrm{e}^{-\sqrt[3]{k}}$$

9.
$$\sum_{k=1}^{\infty} \frac{1}{k^a \ln^b k}$$

10.
$$\sum_{k=1}^{\infty} n^3(1-\cos n^{-1})$$

11.
$$\sum_{k=1}^{\infty} \sin n^{-1} \ln \frac{n+1}{n}$$

12.
$$\sum_{k=1}^{\infty} \sin \frac{n}{n^2+1}$$