C. Vyšetřete (absolutní/neabsolutní) konvergenci řad.

1.
$$\sum_{k=1}^{\infty} \frac{\sin kx}{2^k}$$

2.
$$\sum_{k=1}^{\infty} (-1)^{\frac{k(k+1)}{2}} \frac{1}{\sqrt[3]{k}}$$

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

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

5.
$$\sum_{k=1}^{\infty} (-1)^k (1 + \frac{1}{k})^{k^2} \frac{1}{\mathrm{e}^k}$$

6.
$$\sum_{k=1}^{\infty} \sin(\pi \sqrt{x^2 + k^2})$$

7.
$$\sum_{k=10}^{\infty} (-1)^k \frac{\sqrt[k]{k}}{\ln \ln \ln k}$$

8.
$$\sum_{k=1}^{\infty} \frac{(\ln k)^{100}}{k} \sin \frac{k\pi}{4}$$

9.
$$\sum_{k=2}^{\infty} \frac{\sin(k + \frac{1}{k})}{\ln \ln k}$$

10.
$$\sum_{k=1}^{\infty} (-1)^k \frac{\sin^2 k}{k}$$

11.
$$\sum_{k=2}^{\infty} \frac{1}{\ln^2 k} \cos \frac{\pi k^2}{k + 1}$$

12.
$$\sum_{k=1}^{\infty} (-1)^k \frac{k - 1}{k + 1} \frac{1}{\sqrt[100]{k}}$$

13.
$$\sum_{k=1}^{\infty} \frac{(-1)^k}{k^p}$$

14.
$$\sum_{k=1}^{\infty} \frac{\sin kx}{k^p}, \quad 0 < x < \pi$$

15.
$$\sum_{k=1}^{\infty} (-1)^{k-1} \frac{1}{k^{p + \frac{1}{n}}}$$

16.
$$\sum_{k=1}^{\infty} \frac{\sin \frac{k\pi}{4}}{\sin \frac{k\pi}{4} + k^p}$$

17.
$$\sum_{k=1}^{\infty} (-1)^{k-1} \Big(\frac{1 \cdot 3 \cdots (2n - 1)}{2 \cdot 4 \cdots 2n}\Big)^p$$