408L CLASS PROBLEMS

APRIL 10TH, 2020

Problem 1. Does $\sum_{n=1}^{\infty}(-1)^n \frac{1}{\sqrt{n}}$ converge or diverge?

Problem 2. Does $\sum_{n=2}^{\infty}(-1)^n \frac{1}{\log(n)}$ converge or diverge?

Problem 3. Does $\sum_{n=1}^{\infty}(-1)^n \frac{n}{\sqrt{4n^2-1}}$ converge or diverge?

Problem 4. Does $\sum_{n=0}^{\infty}(-1)^n \cos(n\pi)$ converge or diverge?

Problem 5. Does $\sum_{n=1}^{\infty}(-1)^n \cdot n \cdot \sin(\frac{1}{n})$ converge or diverge?

Problem 6. Does $\sum_{n=1}^{\infty}(-1)^n \left(\frac{\pi}{2} - \tan^{-1}(n)\right)$ converge or diverge?