

Answer on Question #51411 – Math – Calculus

Task

Express the following in Sigma notation:

$$0 + 1 + 2/4 + 3/9 + 4/16 + 5/25 \dots$$

$$2 + 4/3 + 6/6 + 8/9 + 10/12 + 12/15 \dots$$

Solution

$$0 + 1 + \frac{2}{4} + \frac{3}{9} + \frac{4}{16} + \frac{5}{25} \dots = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} \dots = \sum_{n=1}^{\infty} \frac{1}{n} \text{ is the harmonic series ;}$$

$$2 + \frac{4}{3} + \frac{6}{6} + \frac{8}{9} + \frac{10}{12} + \frac{12}{15} \dots = 2 + \sum_{n=1}^{\infty} \frac{2n+2}{3n};$$

Answer: $\sum_{n=1}^{\infty} \frac{1}{n}; \quad 2 + \sum_{n=1}^{\infty} \frac{2n+2}{3n}.$