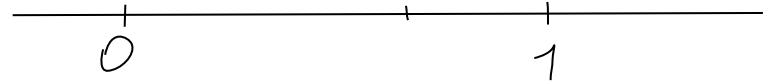


Сходится ли ряд:

$$\frac{1}{1 \times 2 \times 3} + \frac{1}{4 \times 5 \times 6} + \frac{1}{7 \times 8 \times 9} + \dots + \frac{1}{(3n-2) \times (3n-1) \times 3n} + \dots$$

$$\begin{aligned} & (\dots) \cdot n^2 + (\dots) \cdot n + (\dots) = \\ & = 1 = \\ & = 0 \cdot n^2 + 0 \cdot n + 1 \end{aligned}$$

$$1/(1 \cdot 2 \cdot 3) + 1/(4 \cdot 5 \cdot 6) + 1/(7 \cdot 8 \cdot 9) + \dots + 1/((3n-2) \cdot (3n-1) \cdot 3n) + \dots$$



$$\begin{aligned} 1/((3n-2) \cdot (3n-1) \cdot 3n) &= A/(3n-2) + B/(3n-1) + C/(3n) = [A(3n-1)3n + B(3n-2)3n + C(3n-2)(3n-1)] / ((3n-2)(3n-1)(3n)) = \\ &= [A9n^2 - A3n + B9n^2 - 6Bn + C9n^2 - C6n - C3n + C2] / ((3n-2)(3n-1)(3n)) = \\ &= [(A9 + B9 + C9)n^2 + (-A3 - 6B - C6 - C3)n + C2] / ((3n-2)(3n-1)(3n)) \end{aligned}$$

$$(A9 + B9 + C9)n^2 + (-A3 - 6B - C6 - C3)n + C2 = 1$$

$$A9 + B9 + C9 = 0$$

$$-A3 - 6B - C6 - C3 = 0$$

$$C = 1/2$$

$$A9 + B9 + 9/2 = 0$$

$$A = -3/2 - 2B$$

$$(-3/2 - 2B)9 + B9 + 9/2 = 0$$

$$-27/2 - 18B + B9 + 9/2 = 0$$

$$-9B = 18/2$$

$$B = -1$$

$$A = -3/2 + 2 = 1/2$$

$$1/((3n-2) \cdot (3n-1) \cdot 3n) = 1/2/(3n-2) - 1/(3n-1) + 1/2/(3n)$$

$$1/(1 \cdot 2 \cdot 3) = 1/2/1 - 1/2 + 1/2/3$$

$$1/(4 \cdot 5 \cdot 6) = 1/2/4 - 1/5 + 1/2/6$$

$$1/(7 \cdot 8 \cdot 9) = 1/2/7 - 1/8 + 1/2/9$$

$$1/(10 \cdot 11 \cdot 12) = 1/2/10 - 1/11 + 1/2/12$$

$$1/(1 \cdot 2 \cdot 3) < 1/(1 \cdot 1 \cdot 1)$$

$$1/(4 \cdot 5 \cdot 6) < 1/(4 \cdot 4 \cdot 4)$$

$$1/(7 \cdot 8 \cdot 9) = 1/(7 \cdot 7 \cdot 7)$$

$$\begin{aligned} 1/(1 \cdot 2 \cdot 3) + 1/(4 \cdot 5 \cdot 6) + 1/(7 \cdot 8 \cdot 9) &< 1/(1 \cdot 1 \cdot 1) + 1/(4 \cdot 4 \cdot 4) + 1/(7 \cdot 7 \cdot 7) + \dots < \\ &< 1/(1 \cdot 1 \cdot 1) + 1/(2 \cdot 2 \cdot 2) + 1/(3 \cdot 3 \cdot 3) + \dots < \\ &< 1/(1^2) + 1/2^2 + 1/3^2 = P^2/6 \end{aligned}$$

$$1/(1 \cdot 2 \cdot 3) + 1/(4 \cdot 5 \cdot 6) + 1/(7 \cdot 8 \cdot 9) + \dots + 1/((3n-2) \cdot (3n-1) \cdot 3n) + \dots$$