CORRECTLY SOLVED AND SUPERIOR WORK

Determine the convergence or divergence of the series: $\sum_{n=2}^{\infty} \left[\frac{2n-1}{n^2+n} \right]$ (10 points)

Compare to
$$\frac{2N}{N^2} = \frac{2}{N} = \frac{2}{N}$$
 diverges by harmonic series

$$\sum_{N=2}^{\infty} \frac{2N-1}{N^2+N} \leq \sum_{N=2}^{\infty} \frac{2}{N} \quad \text{So DCT fails}$$

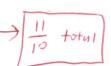
$$\frac{1}{\lim_{N \to \infty} \frac{2N-1}{N^2+N}} = \lim_{N \to \infty} \frac{(2N-1)N}{(N^2+N)^2} = \lim_{N \to \infty} \frac{2N^2-N}{2N^2+2N} \left(\frac{1}{N^2}\right) = \lim_{N \to \infty} \frac{2-\frac{1}{N}}{2+\frac{2}{N}} = \frac{2-\frac{1}{N}}{2+\frac{2}{N}} = \frac{1}{2+\frac{2}{N}} = \frac{1}{2+\frac{2}{N}}$$

The quality of the notation and organization on this problem (circle one):

-1 point (unacceptably messing, illogical, or poor mathematical notation)

O points (acceptable work)

+1 point (superior neatness rigorous notation and mathematical logic)



INCORRECTLY SOLVED BUT STILL SUPERIOR WORK

Determine the convergence or divergence of the series: $\sum_{n=2}^{\infty} \left[\frac{2n-1}{n^2+n} \right]$ (10 points)

compare to
$$\frac{1}{N^2}$$
 red $\frac{1}{N^2}$ posties $p=2 \ge 1$ not a good comparison $\frac{2}{N^2}$ $\frac{2N-1}{N^2+N}$?? $\frac{2}{N}$ so DCT fails

Lit
$$\frac{2N-1}{N^2}$$
 $\frac{2N^3-N^2}{N^2+N} = \lim_{N \to \infty} \frac{2N^3-N^2}{N^2+N} = \lim_{N \to \infty} \frac{2-\frac{1}{N}}{\frac{1}{N^2}} = \frac{2-\frac{1}{N}}{\frac{1}{N^2}} = \frac{2-\frac{1}{N}}{\frac{1}{N}} = \frac{2-\frac{1}{N}}{\frac{$

The quality of the notation and organization on this problem (circle one):

-1 point (unacceptably messing, illogical, or poor mathematical notation)

O points (acceptable work)

+1 point (superior neatness rigorous notation and mathematical logic)

CORRECTLY SOLVED AND ACCEPTABLE WORK

Determine the convergence or divergence of the series: $\sum_{n=2}^{\infty} \left[\frac{2n-1}{n^2+n} \right]$ (10 points)

Compare
$$\frac{2}{N} = \frac{2}{N} > \frac{2}{N} \frac{2}{N$$

The quality of the notation and organization on this problem (circle one):

-1 point (unacceptably messing, illogical, or poor mathematical notation)

0 points (acceptable work)

+1 point (superior neatness rigorous notation and mathematical logic)

INCORRECTLY SOLVED BUT ACCEPTABLE WORK

Determine the convergence or divergence of the series: $\sum_{n=2}^{\infty} \left[\frac{2n-1}{n^2+n} \right]$ (10 points)

$$\frac{|A_{N+1}|}{|A_{N}|} = \lim_{N \to \infty} \frac{|2(N+1)-1|}{|N+1|} = \lim_{N \to$$

nothin,

CORRECTLY SOLVED BUT UNACCEPTABLE WORK

Determine the convergence or divergence of the series: $\sum_{n=2}^{\infty} \left[\frac{2n-1}{n^2+n} \right]$ (10 points)

$$\frac{2^{2N-1}}{N^2+N} = \frac{2N}{N^2} = \frac{2}{N} \frac{N + 1}{N^2} = \frac{2N}{N} \frac{N^2}{N^2} = \frac{2N}{N} \frac{2N}{N^2} = \frac{2N}{N} \frac{2N}{N} = \frac{2N}{N$$

$$\lim_{N \to \infty} \frac{2}{\frac{2}{N^2 + N}} = \frac{2n^2 + 2n}{2n^2 - N} = \frac{2}{2} - \frac{2}{N}$$

$$\lim_{N \to \infty} \frac{2}{\frac{2n-1}{N^2 + N}} = \frac{2n^2 + 2n}{2} = \frac{2}{N^2 - N} = \frac{2}{2} - \frac{2}{N}$$

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$$\lim_{N \to \infty} \frac{2}{N} = \frac{2}$$

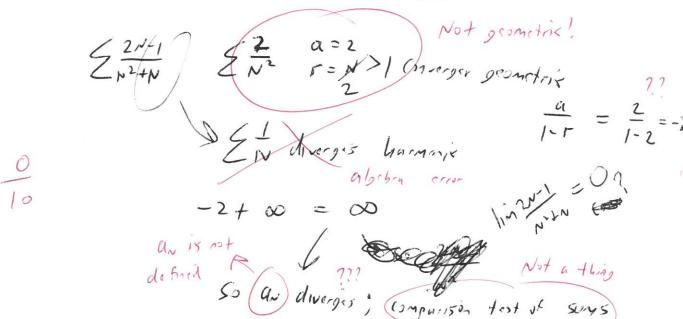
The quality of the notation and organization on this problem (circle one):

-1 point (unacceptably messing, illogical, or poor mathematical notation)

+1 point (superior neatness rigorous notation and mathematical logic)

INCORRECTLY SOLVED AND UNACCEPTABLE WORK

Determine the convergence or divergence of the series: $\sum_{n=2}^{\infty} \left[\frac{2n-1}{n^2+n} \right]$ (10 points)



The quality of the notation and organization on this problem (circle one):

-1 point (unacceptably messing, illogical, or poor mathematical notation) 0 points (acceptable work)

+1 point (superior neatness rigorous notation and mathematical logic)