BY GIMUSI 03/02/13

$$\sum_{n=1}^{\infty}\left(\sqrt{1+\frac{(-1)^n}{\sqrt{n}}}-1\right)$$

$x\to 0$ $\quad \sqrt{1+x}-1 = \frac{1}{2}x - \frac{1}{8}x^2 + g(x) \qquad \lim_{x\to 0}\frac{g(x)}{x^3} = \frac{1}{16}$

PONIAMO $\quad a_n = \frac{(-1)^n}{\sqrt{n}}$

$$\sum_{n=1}^{\infty}\left(\sqrt{1+\frac{(-1)^n}{\sqrt{n}}}-1\right) = \frac{1}{2}\sum_{n=1}^{\infty} a_n - \frac{1}{8}\sum_{n=1}^{\infty} a_n^2 + \sum_{n=1}^{\infty} g(a_n)$$

$\sum_{n=1}^{\infty} a_n = \sum_{n=1}^{\infty}\frac{(-1)^n}{\sqrt{n}}$ CONVERGE PER LEIBNITZ

$\sum_{n=1}^{\infty} a_n^2 = \sum_{n=1}^{\infty}\frac{1}{n}$ DIVERGE A $+\infty$

$\sum_{n=1}^{\infty} g(a_n)$ CONVERGE ASSOLUTAMENTE

INFATTI

$\sum_{n=1}^{\infty} |g(a_n)|$ CONVERGE PER CONFRONTO ASINTOTICO

CON $b_n = \frac{1}{n\sqrt{n}}$

$$\left|\frac{g(a_n)}{a_n^3}\right| = \frac{|g(a_n)|}{b_n} \to \frac{1}{16}$$

$\Rightarrow$ LA SERIE DIVERGE A $-\infty$