Найти сумму ряда

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

$$\frac{1}{n^2+n-2}=\frac{1}{(n+2)(n-1)}=\frac{A}{n+2}+\frac{B}{n-1}=\frac{A(n-1)+B(n+2)}{(n+2)(n-1)}$$

$$An-A+Bn+2B \Rightarrow \begin{cases} 2B-A=1 \\ A+B=0 \end{cases} \Rightarrow \begin{cases} 3B=1 \\ A=-B \end{cases} \Rightarrow \begin{matrix} B=\frac{1}{3} \\ A=-\frac{1}{3} \end{matrix}$$

$$\Rightarrow \frac{1}{n^2+n-2}=\frac{1}{3(n-1)}-\frac{1}{3(n+2)}=\frac{1}{3}\left(\frac{1}{n-1}-\frac{1}{n+2}\right)$$

$$\Rightarrow \sum_{n=2}^{\infty}\frac{1}{n^2+n-2}=\frac{1}{3}\left(\sum_{n=2}^{\infty}\frac{1}{n-1}-\sum_{n=2}^{\infty}\frac{1}{n+2}\right)=$$

$$\frac{1}{3}\sum_{n=2}^{\infty}\left(\left(\frac{1}{1}+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\frac{1}{5}+\dots\right)-\frac{1}{4}-\frac{1}{5}-\frac{1}{6}-\frac{1}{7}-\dots\right)=\frac{1}{3}\left(1+\frac{1}{2}+\frac{1}{3}\right)=$$

$$=\frac{1}{3}\cdot\frac{11}{6}=\frac{11}{18}$$