

$$\sum_{n=1}^{\infty} a_n = \sum_{n=1}^{\infty} (-1)^{n-1} \frac{1}{5n+2} = \sum_{n=1}^{\infty} (-1)^{n-1} b_n. \text{ Now}$$

$b_n = \frac{1}{5n+2} > 0$, $\{b_n\}$ is decreasing, and $\lim_{n \rightarrow \infty} b_n = 0$, so the series converges by the Alternating Series Test.