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p.1

$n=1$

$$\frac{3}{2} = \frac{1+1}{2} \quad \checkmark$$

$n=k+1$

$$\frac{3}{2} - \frac{5}{6} + \frac{7}{12} - \dots + \frac{(-1)^{k+1}(2k+1)}{k(k+1)} + \frac{(-1)^{k+2}(2k+3)}{(k+1)(k+2)} \stackrel{?}{=} \frac{1+(-1)^{k+2}}{k+2}$$

$$\frac{1+k+(-1)^{k+1}}{k+1} + \frac{(-1)^{k+2}(2k+3)}{(k+1)(k+2)} \stackrel{?}{=}$$

$$\frac{(k+2)(1+k+(-1)^{k+1}) + (-1)^{k+2}(2k+3)}{(k+1)(k+2)} =$$

$$\frac{\cancel{k+2} + \cancel{k+2} + (-1)^{k+1}(k+2) + (-1)^{k+2}(2k+3)}{(k+1)(k+2)} = \frac{(k+1)(k+2) + (-1)^{k+2}}{(k+1)(k+2)}$$

