(i) − (ii)

$$\frac{p}{q} - \frac{2q}{p} = \cancel{\sqrt{n+1}} + \sqrt{n-1} - \cancel{\sqrt{n+1}} + \sqrt{n-1}$$

$$\Rightarrow \frac{p^2 - 2q^2}{pq} = 2\sqrt{n-1}$$

$$\Rightarrow \frac{p^2 - 2q^2}{2pq} = \sqrt{n-1}$$

LHS $= \frac{p^2 - 2q^2}{2pq}$ is rational [num. is integer by closure prop of integers for mul. and sub, den is integer]

$\therefore$ RHS $= \sqrt{n-1}$ is rational [$\because$ rat. no. = rat. no.]

Similarly $\sqrt{n+1}$ is rational

$\Rightarrow n+1,\ n-1$ are perfect squares [$\sqrt{\text{Perfect Square}}$ is rational]

difference $= \cancel{n}+1-\cancel{n}+1$
$= 2$

which is not possible,
$\because$ difference of two perfect squares is at least 3

$\therefore$ our supposition is wrong