Determining sign of the turns ratio

$$\frac{\mathbb{V}_2}{\mathbb{V}_1} = \frac{N_2}{N_1} = n \qquad \frac{\mathbb{I}_2}{\mathbb{I}_1} = \frac{N_1}{N_2} = \frac{1}{n}$$

$$\frac{\mathbb{V}_2}{\mathbb{V}_1} = \frac{N_2}{N_1} = n \qquad \frac{\mathbb{I}_2}{\mathbb{I}_1} = \frac{-N_1}{N_2} = \frac{-1}{n}$$

$$\frac{\mathbb{V}_2}{\mathbb{V}_1} = \frac{-N_2}{N_1} = -n \qquad \frac{\mathbb{I}_2}{\mathbb{I}_1} = \frac{N_1}{N_2} = \frac{1}{n}$$

$$\frac{\mathbb{V}_2}{\mathbb{V}_1} = \frac{-N_2}{N_1} = -n \qquad \frac{\mathbb{I}_2}{\mathbb{I}_1} = \frac{-N_1}{N_2} = \frac{-1}{n}$$