問題

$$\sqrt{2}+\sqrt{3}>\pi \qquad \text{を証明せよ。}$$

解答

$$\pi<3+\frac{1}{7}=\frac{22}{7}=\frac{880}{280}$$

$$\sqrt{2}-1<\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{2+\cfrac{1}{2}}}}}=\frac{29}{70}=\frac{116}{280}$$

$$\sqrt{3}+1<2+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1+\cfrac{1}{2+\cfrac{1}{1}}}}}}}=\frac{153}{56}=\frac{765}{280}$$

より,

$$\pi<\frac{22}{7}=\frac{880}{280}<\sqrt{2}+\sqrt{3}<\frac{29}{70}+\frac{153}{56}=\frac{116}{280}+\frac{765}{280}=\frac{881}{280} \qquad \therefore \quad \pi<\frac{880}{280}<\sqrt{2}+\sqrt{3}<\frac{881}{280}$$

$$\therefore \quad \sqrt{2}+\sqrt{3}>\pi$$