

2.53
I KA

$$n=2 \quad \frac{1}{2} + \frac{1}{3} < \frac{11}{12} \quad \checkmark$$

$$n \quad \frac{1}{n} + \frac{1}{n+1} + \dots + \frac{1}{2n-1} < \frac{11}{12}$$

$$\frac{1}{n+1} + \dots + \frac{1}{2n-1} < \frac{11}{12} - \frac{1}{n}$$

$$n+1 \quad \underbrace{\frac{1}{n+1} + \frac{1}{n+2} + \dots + \frac{1}{2n-1}} + \frac{1}{2n} + \frac{1}{2n+1} \stackrel{?}{<} \frac{11}{12}$$

$$\frac{11}{12} - \underbrace{\frac{1}{n} + \frac{1}{2n} + \frac{1}{2n+1}} \stackrel{?}{<} \frac{11}{12}$$

$$-\frac{1}{2n} + \frac{1}{2n+1} \stackrel{?}{<} 0$$

$$\frac{-2n-1-2n}{2n(2n+1)} \stackrel{?}{<} 0$$

$$\frac{-1}{2n(2n+1)} < 0$$