$$\sum_{n=1}^{\infty} \frac{1}{n(n+1)}$$

$$\sum_{n=1}^{\infty} \frac{1}{n(n+1)} = \sum_{n=1}^{\infty} (\frac{1}{n} - \frac{1}{n+1}) = \sum_{n=1}^{\infty} \frac{1}{n} - \sum_{n=1}^{\infty} \frac{1}{n+1}$$

$$= \sum_{n=1}^{\infty} \frac{1}{n} - \sum_{n=2}^{\infty} \frac{1}{n} = 1 - \lim_{n \to \infty} \frac{1}{n+1} = 1 - 0 = 1$$

$$\boxed{\sum_{n=1}^{\infty} \frac{1}{n(n+1)} = 1}$$