

375
P1

$$\lg\left(1 + \frac{3}{1}\right) + \lg\left(1 + \frac{5}{4}\right) + \lg\left(1 + \frac{7}{9}\right) + \dots + \lg\left(1 + \frac{2n+1}{n^2}\right) = 2 \lg(n+1)$$

n=1 n=2 n=3

$$\lg\left(1 + \frac{3}{1}\right) \stackrel{?}{=} 2 \lg(2)$$

$$\lg 4 \stackrel{?}{=} 2 \lg 2$$

$$2 \lg 2 = 2 \lg 2 \quad \checkmark$$

Wie oft die Reihe von n ist = für n=1

...
für n=2

$$\lg\left(1 + \frac{3}{1}\right) + \lg\left(1 + \frac{5}{4}\right) + \dots + \lg\left(1 + \frac{2n+1}{n^2}\right) + \lg\left(1 + \frac{2n+3}{(n+1)^2}\right) \stackrel{?}{=} 2(\lg(n+2))$$

Reihe

$$2 \lg(n+1) + \lg\left(1 + \frac{2n+3}{(n+1)^2}\right) \stackrel{?}{=} 2 \lg(n+2)$$

$$\lg\left(\frac{(n+1)^2 + 2n+3}{(n+1)^2}\right) \stackrel{?}{=} 2(\lg(n+2) - \lg(n+1))$$

$$\lg\left(\frac{n^2 + 2n+1 + 2n+3}{(n+1)^2}\right) \stackrel{?}{=} 2 \lg\left(\frac{n+2}{n+1}\right)$$

$$\lg\left(\frac{n^2 + 4n+4}{(n+1)^2}\right) \stackrel{?}{=} 2 \lg\left(\frac{n+2}{n+1}\right)$$

$$\lg\left(\frac{(n+2)^2}{(n+1)^2}\right) \stackrel{?}{=} 2 \lg\left(\frac{n+2}{n+1}\right)$$

$$2 \lg\left(\frac{n+2}{n+1}\right) = 2 \lg\left(\frac{n+2}{n+1}\right)$$