

1.15  
6

$n=1$

$$1 \cdot \log\left(1 + \frac{1}{1}\right) = 1 \cdot \log(2) - \log(1)$$

$$\log 2 = \log 2 \quad \checkmark$$

$n+1$

$$1 \cdot \log\left(1 + \frac{1}{1}\right) + \dots + n \log\left(1 + \frac{1}{n}\right) + (n+1) \log\left(1 + \frac{1}{n+1}\right) = ?$$

$$(n+1) \log(n+2) - \log[1 \cdot \dots \cdot n(n+1)]$$

$$n \log(n+1) - \log(1 \cdot \dots \cdot n) + (n+1) \log\left(1 + \frac{1}{n+1}\right) = (n+1) \log(n+2) -$$

$$[\log(1 \cdot \dots \cdot n) + \log(n+1)]$$

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

$$n \log(n+1) + (n+1) [\log(n+2) - \log(n+1)] = (n+1) \log(n+2) - \log(n+1)$$

$$n \log(n+1) - (n+1) \log(n+1) = -\log(n+1) \quad \checkmark$$