Problem 21)

$$\ln(1+x) = x - \tfrac{1}{2}x^2 + \tfrac{1}{3}x^3 - \tfrac{1}{4}x^4 + \cdots. \qquad (-1 < x \le 1)$$

$$\ln(1-x) = -(x + \tfrac{1}{2}x^2 + \tfrac{1}{3}x^3 + \tfrac{1}{4}x^4 + \cdots).$$

$$\rightarrow \quad \ln(1+x) - \ln(1-x) = 2(x + \tfrac{1}{3}x^3 + \tfrac{1}{5}x^5 + \cdots)$$

$$\rightarrow \quad \ln\left(\tfrac{1+x}{1-x}\right) = 2(x + \tfrac{1}{3}x^3 + \tfrac{1}{5}x^5 + \cdots).$$

$$\tfrac{1+x}{1-x} = y \quad \rightarrow \quad x = \tfrac{y-1}{y+1} \quad \rightarrow \quad \ln y = 2\left[\left(\tfrac{y-1}{y+1}\right) + \tfrac{1}{3}\left(\tfrac{y-1}{y+1}\right)^3 + \tfrac{1}{5}\left(\tfrac{y-1}{y+1}\right)^5 + \cdots\right]; \quad (y > 0).$$