Maths of the Day

$$\sum_{n=1}^{\infty} \frac{x^{n-1}}{n} H_n = -\frac{Li_2\left(\frac{x}{x-1}\right)}{x}$$

$$\sum_{n=1}^{\infty} \frac{x^{n-1}}{n}(H_n^2 + H_n^{(2)}) = -2\frac{Li_3\left(\frac{x}{x-1}\right)}{x}$$

$$\sum_{n=1}^{\infty} \frac{x^{n-1}}{n}(H_n^3 + 3H_nH_n^{(2)} + 2H_n^{(3)}) = -6\frac{Li_4\left(\frac{x}{x-1}\right)}{x}$$