יותר מזל משכל

⚀ א. $1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\frac{1}{16}+\ldots=2$, ב. $1+\frac{1}{6}+\frac{1}{36}+\frac{1}{216}+\ldots=\frac{6}{5}$.

ג. $\frac{1}{1}+\frac{1}{2}+\frac{2}{4}+\frac{3}{8}+\frac{5}{16}+\frac{8}{32}+\frac{13}{64}+\ldots=?$.

⚁ $\frac{729}{1729}+\frac{729\cdot 728}{1729\cdot 1728}+\frac{729\cdot 728\cdot 727}{1729\cdot 1728\cdot 1727}+\ldots=?$.

⚂ $\sum_{k=0}^{n}\binom{n+k}{n}\Big/2^k=?$.

⚃ א. $\sum_{n=0}^{\infty}\frac{1}{n+1}\cdot\frac{1}{4^n}\cdot\binom{2n}{n}=?$, ב. $\sum_{n=0}^{\infty}\frac{1}{n+2}\cdot\frac{1}{4^n}\cdot\binom{2n+1}{n+1}=?$.

⚄ $\int_0^1 x^k\left(1-x\right)^m dx=\frac{k!\cdot m!}{\left(k+m+1\right)!}$.

⚅ $N\int_0^1\int_0^1\left(1-xy\right)^{N-1}dxdy=1+\frac{1}{2}+\frac{1}{3}+\ldots+\frac{1}{N}$.