Problem statement The series $\sum\limits_{n=1}^{\infty} \frac{(-1)^{n+1}}{n}$ and $\sum\limits_{n=1}^{\infty} \frac{1}{n2^n}$ both converge (why?). By co-incidence it turns out that their sums are both equal to $\ln 2$. (You'll understand this coincidence when we study Taylor series.)

Which series converges "faster" (and so numerically gives a more efficient way to get a numerical approximation for $\ln 2$)? Justify your answer by computing how many terms of each series must be added up to approximate $\ln 2$ with maximum allowed error of 10^{-6}.