Simpson's Rule Approximation of

$$\frac{1}{\sqrt{2\pi}} \int_0^2 e^{-\frac{1}{2}z^2}\, dz$$

N	Simpson(N)
4	0.4772010643
10	0.4772488661
50	0.4772498666
100	0.4772498679

$$\frac{1}{\sqrt{2\pi}} \int_0^2 e^{-\frac{1}{2}z^2}\, dz \approx \frac{1}{\sqrt{2\pi}} \sum_{n=0}^{N} \frac{(-1)^n 2^{n+1}}{n!(2n+1)}$$

N	Series approx
4	0.4922398929
10	0.4772514091
20	0.4772498679
50	0.4772498679

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