

Solutions

2.1 Choose two of five factors and include 2^2 : $C(5,2) \times 4 = 40$.

2.2 Substitute 0.1: $1 - 0.1 + 0.01 = 0.91$.

2.3 The powers run from 0 through 5, giving six terms.

2.4 False. An expansion in $2x$ requires $|2x| < 1$ for the infinite series, not merely $|x| < 1$. Positive-integer expansions are finite and do not have that convergence restriction.

2.5 A The number of ways to choose a specified number of objects from a set.

3.1 Approximation 0.84; exact $5/6$. Identity $(1-x+x^2)-1/(1+x)=x^3/(1+x)$, so error $1/150 \approx 0.006667$, positive. The infinite geometric expansion requires $|x| < 1$.