1 Demonstrating Improved Accuracy

1.1 Maximal Absolute Error

Define the maximal absolute error of the approximation to be

$$MABS(n,p) \;=\; \max_{k\in\{0,1,\ldots,n\}} \left| F_{B(n,p)}(k) - F_{appr(n,p)}(k+0.5) \right| \tag{1}$$

where $F_{B(n,p)}$ is the cdf of the binomial and $F_{appr(n,p)}$ is the cdf of either the normal or skew-normal approximation; the 0.5 is a continuity correction.