

consider the sum of  $n$  quantities each having a rectangular PDF of the same semi-width, where  $n$  ranges from 1 to 9. Figure 1 shows successive convolutions used to produce PDFs for the partial sums of these quantities.

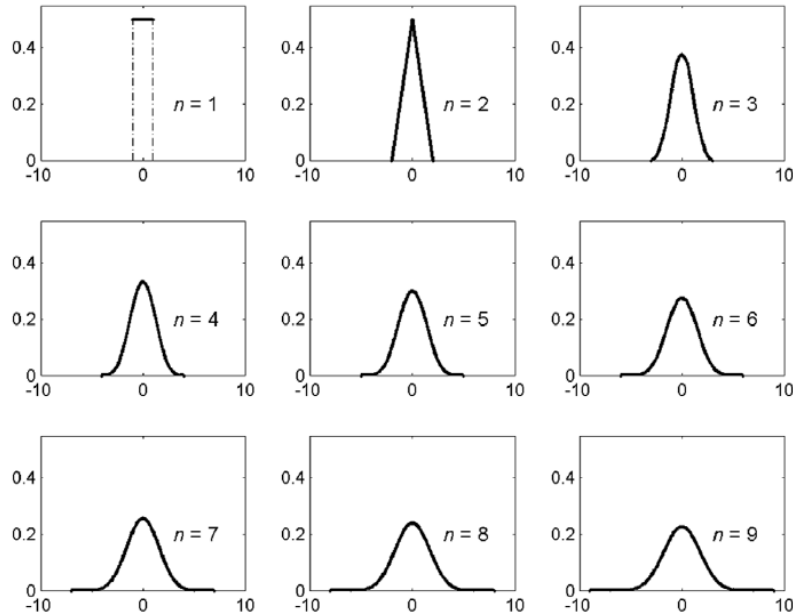


Figure 1. PDFs for the sum of  $n$  quantities (in arbitrary units) each having a rectangular PDF of semi-width 1 unit.

Figure 2 shows the PDF for  $Y = X_1 + X_2 + X_3$  with  $X_1 \sim N(10.0, (0.1)^2)$ ,  $X_2 \sim R(-1.0, 1.0)$  and  $X_3 \sim R(-0.5, 0.5)$ ,

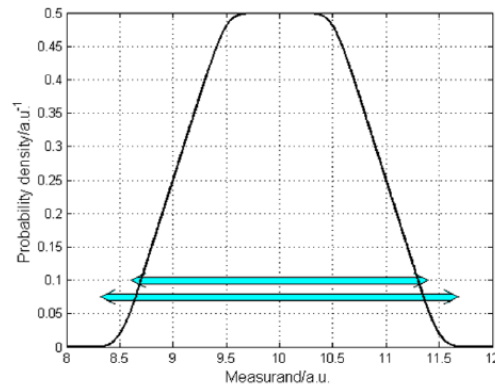


Figure 2. PDF for  $Y = X_1 + X_2 + X_3$ , with  $X_1$  Gaussian and  $X_2$  and  $X_3$  rectangular, and 99% GUM and exact (upper) coverage intervals.

Gaussian-like behaviour can be discerned in the tails, and trapezoidal-like behaviour, arising from the convolution of the two rectangular distributions, elsewhere.