

Table 3.3 Functions available in WinBUGS

WinBUGS Syntax	Function	Description
1. <code>abs(x)</code>	$ x $	Absolute value
2. <code>cloglog(x)</code>	$\log(-\log(1-x))$	Complementary log-log function
3. <code>cos(x)</code>	$\cos(x)$	Cosine function
4. <code>cut(x)</code>		Posterior of x is not updated by the likelihood
5. <code>equals(x1, x2)</code>	$f(x_1, x_2) = 1$ when $x_1 = x_2$ $= 0$ otherwise	Binary indicator function for equal nodes
6. <code>exp(x)</code>	e^x	Exponent value
7. <code>inprod(v1[], v2[])</code>	$\sum_i v_{1i} v_{2i}$	Inner product of two vectors
8. <code>interp.lin(x, v1[], v2[])</code>	$v_{2i} + (v_{2,i+1} - v_{2i})$ $\times (x - v_{1i}) / (v_{1,i+1} - v_{1i})$	Interpolation line
8. <code>inverse(M[,])</code>	\mathbf{A}^{-1}	Inverse of a symmetric positive-definite matrix
9. <code>log(x)</code>	$\log(x)$	Logarithm (ln)
10. <code>logdet(M[,])</code>	$\log \mathbf{A} $	Logarithm of the determinant of a symmetric positive-definite matrix
11. <code>logfact(k)</code>	$\log(k!)$	Log factorial function of an integer
12. <code>loggam(x)</code>	$\log(\Gamma(x))$	Log gamma function
13. <code>logit(x)</code>	$\log \frac{x}{1-x}$	Logit function
14. <code>max(x1, x2)</code>	$\max(x_1, x_2)$	Maximum of two values
15. <code>mean(v[])</code>	$\bar{v} = \sum_{i=1}^n v_i / n$, where n is the length of vector v	Sample mean
16. <code>min(x1, x2)</code>	$\min(x_1, x_2)$	Minimum of two values
17. <code>phi(x)</code>	$P(X \leq x)$, $X \sim N(0, 1)$	CDF of standardized normal
18. <code>pow(x, z)</code>	x^z	Power function
19. <code>sin(x)</code>	$\sin(x)$	Sine function
20. <code>sqrt(x)</code>	\sqrt{x}	Square root
21. <code>rank(v[], k)</code>	$\sum_i I(v_i \leq v_k)$, where $I(z) = 1$ if z true and 0 otherwise	Rank of s component of a vector
22. <code>ranked(v[], k)</code>	$v_i : \sum_s I(v_s \leq v_i) = k$	Element of a vector with rank s
23. <code>round(x)</code>		Round to the closest integer
24. <code>sd(v[])</code>	$\sqrt{\sum_{i=1}^n (v_i - \bar{v})^2 / (n-1)}$	Sample standard deviation
25. <code>step(x)</code>	$f(x) = 1$ when $x \geq 0$; 0 otherwise	Binary indicator function of positive nodes
26. <code>sum(v[])</code>	$\sum_i v_i$	Sum of a vector's components
27. <code>trunc(x)</code>		Truncation to the closest smaller than x integer

Key: x , z = single real value or logical or mathematical expression; k = single integer value; v = vector; M = matrix.