

Appendix A

The Top 111 MATLAB Functions

This appendix lists the 111 MATLAB functions that we believe are the most useful for the typical MATLAB user. Information about these functions can be found by looking in the index of this book, or by using MATLAB's online documentation.

Table A.1. *Elementary and specialized vectors and matrices.*

| | |
|----------|--------------------------------------|
| zeros | Zeros array |
| ones | Ones array |
| eye | Identity matrix |
| rand | Uniformly distributed random numbers |
| randn | Normally distributed random numbers |
| gallery | Test matrices |
| linspace | Linearly spaced vector |

Table A.2. *Special variables and constants.*

| | |
|------|----------------------------------|
| ans | Most recent answer |
| eps | Floating point relative accuracy |
| i, j | Imaginary unit ($\sqrt{-1}$) |
| inf | ∞ |
| NaN | Not a Number |
| pi | π |

Table A.3. *Array information and manipulation.*

| | |
|----------------------|---|
| <code>size</code> | Array dimensions |
| <code>length</code> | Length of array (size of longest dimension) |
| <code>reshape</code> | Change size of array |
| <code>:</code> | Regularly spaced vector and index into matrix |
| <code>end</code> | Last index in an indexing expression |
| <code>diag</code> | Diagonal matrices and diagonals of matrix |
| <code>tril</code> | Extract lower triangular part |
| <code>triu</code> | Extract upper triangular part |
| <code>repmat</code> | Replicate and tile array |

Table A.4. *Logical operators.*

| | |
|----------------------|----------------------------------|
| <code>all</code> | Test for all nonzeros |
| <code>any</code> | Test for any nonzeros |
| <code>find</code> | Find indices of nonzero elements |
| <code>isempty</code> | Test for empty array |
| <code>isequal</code> | Test if arrays are equal |

Table A.5. *Flow control.*

| | |
|---------------------------|--|
| <code>error</code> | Display error message and abort function |
| <code>for</code> | Repeat statements a specific number of times |
| <code>if</code> | Conditionally execute statements |
| <code>switch, case</code> | Choose among several cases |
| <code>while</code> | Repeat statements indefinitely |

Table A.6. *Basic data analysis.*

| | |
|-------------------|-----------------------|
| <code>max</code> | Largest component |
| <code>min</code> | Smallest component |
| <code>mean</code> | Average or mean value |
| <code>std</code> | Standard deviation |
| <code>sum</code> | Sum of elements |
| <code>prod</code> | Product of elements |
| <code>sort</code> | Sort elements |