

## MathsMate Solvers App:-

MathsMate Information Plus Solvers Free provides general mathematical information sheets plus a range of equations solvers/calculations in the maths fields of Geometry, Statics, Series, Proportional Lengths, Interest, Areas and Volumes. Also operations between square matrices can be performed (multiply, Addition, Subtraction, Transpose) as well as Linear Equations solving using the Jacobi Iteration method. General settings can be made for the program and for the Jacobi Iteration method. The App is easy to use with a tab/swipe layout design. The About/Help tab offers a simple web browser. For the linear solvers using the Jacobi method requires setting the initial variable estimates and the number of iterations. On display of the results a Error value is also displayed next to the variable value. The error is the difference between the displayed and previous variable value. Generally the smaller the error value the more accurate is the result. Matrices can be saved, emailed, downloaded to file and reopened.

Also Unit conversions and sci-calculator.

Main Screen: After selecting a category, select the appropriate sub category, to display the information, solve equation variables .e.g. Maths - Geometry category has been selected, straight line equation to be solved. Change equation values to recalculate the equations other variables.

Use the keypad to enter values into the edit fields. Click on a field and click on the keypad. Alter fields to recalculate values. Use the back and X button to back delete and clear the selected edit field. Use  $x10^{\wedge}$  to represent power to 10 numbers i.e.  $2x10^{\wedge}2$ \n

### MATRICES TAB :-\n

Allows the manipulation of square matrices from 2 to 10 and also the solving of linear equations using the Jacobi Iteration method.

For matrices calculations. Select the required square matrix from the dropdown list selector. i.e. 3x3 matrix selected. Matrix 1 is on the left of the  $\| =$  sign and matrix 2 is to the right. Each line is 1 row of the matrix and each column is separated by the comma ,.

Use the keypad to enter values into the edit fields. Click on a field and click on the keypad. The calculate button has the calculator display and green border. Use the back and X button to back delete and clear the selected edit field. For matrix operations use the m+m button to add the matrices together, use the m-m button to subtract, mxm to multiply, use the m<sub>1</sub>T and m<sub>2</sub>T to find the transformation of each matrix. (the calculate button is not used).

Use the save button to save the entered matrices. Use the download to save the matrices to file, email and reopen a saved matrix can also be done.\n

LINEAR SOLVER :- To setup the linear equations. Select the square matrix, enter the matrix on the left side of the  $\| =$  symbol and only enter the value on the right side of the  $\| =$ .

Click the calculate button, (calculator display with green border) in the keypad to solve the equations. The results will be displayed as x,y,x<sub>1</sub>,y<sub>1</sub> etc as the variable names. For the linear solvers using the Jacobi method requires setting the initial variable estimates and the number of iterations. These initial estimates can be entered for each variable in the settings tab. The initial defaults are 0. On display of the results a Error value is also displayed next to the variable value. The error is the difference between the displayed and previous variable value. Generally the smaller the error value the more accurate is the result.\n

Calculator functions. Calculation result are occur on each key entry.

Enter the required calculation, click the = button for the final calculation result. Click the inv button for inverse trig calculations,

click the Deg button for alternating from Deg/Rad/Hyp. Use the  $x10^{\wedge}$  key to raise the number by a factor of 10 i.e. 10000 enter  $1x10^{\wedge}5$  Note: use only integer values after the  $^{\wedge}$  i.e. don't use decimal point values  $2x10^{\wedge}1.3$ . \n

**Settings :-**

**How To Use :-**

To change the number of decimal points behind a calculated value, select a value from the dropdownlist box.

Check the checkbox to have Engineering form results notation displayed.

Scroll interactions number picker to set the amount of interations for the Jacobi method. To set initial estimates values, scroll to the required estimate variable i.e.  $x_1$  and then scroll the adjacent number picker to the required value (0-100). Do the same for any other  $x$  value. Values will be saved on scrolling.

The reset button will reset to the default values.