

DERIVE – EXTRA CREDIT - MATH 107 - Prof. Richard B. Goldstein

Using the DERIVE package in the labs do the following problems and **print** the results. Make the first expression (#1) your name by typing your name in quotes such as: “Chris Jones”

GRAPHICS

Graph $x^2 - 8x + 5$, $3e^x$, and $2x - 3y = -30$ and print out. Do the following steps:

- [1] Type in the expression x^2-8x+5 , press .

Note: To get ^ use Shift + 6 or select , the 6th item in the top row of symbols.
Be careful not to select the 11th item in the bottom row which is used for AND.
- [2] Type Ctrl + 2 or press the icon button to switch windows. Press again to plot.
- [3] Press twice to rescale both axes.
- [4] Return to the algebra window by Ctrl + 1 or by the icon .
- [5] Type in the expression $3e^x$ (**note:** ê is in the symbol table as 3rd from right in top row)
Alternatives are $3\exp(x)$ and $3\#e^x$.
- [6] Type Ctrl + 2 or press the icon button to switch windows. Press again to plot.
- [7] Return to the algebra window by Ctrl + 1 or by the icon .
- [8] Type in the expression $2x-3y=30$
- [9] Type Ctrl + 2 or press the icon button to switch windows. Press again to plot.
You may get a graph in yellow – press again to switch colors.
- [10] Use File | Print or the icon

FINANCIAL CALCULATIONS:


PROBLEM	DERIVE
Future value of 20 deposits of \$2,000 at 8.5% annually	[1] Type <code>fval(8.5%,20,-2000,0,0)</code> [2] Select Simplify Approximate , with 7 digits of accuracy [3] Press Approximate Note: function <code>fval(i, nper, pmt, pval, time)</code>
Number of periods to accumulate \$100,000 when \$2,000 is saved annually at 8%	[1] Type <code>nper(8%,2000,0,-100000,0)</code> [2] Select Simplify Approximate [3] Press Approximate Note: function <code>nper(i, pmt, pval, fval, time)</code>
Monthly payment on a four year loan of \$15,000 when the interest rate is 10%	[1] Type <code>pmt(10%/12,4*12,-15000)</code> [2] Select Simplify Approximate [3] Press Approximate Note: function <code>pmt(i, nper, pval, fval, time)</code>

*** Please turn the page for more Matrix activities. ***

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MATRICES:

$\det \begin{bmatrix} 8 & 2 \\ 11 & 3 \end{bmatrix}$	<p>[1] Author Matrix, with 2 Rows & 2 Columns [2] Fill in the matrix table and press OK (this was my equation #11) [3] Type det(#11) [4] Select Simplify Basic</p>
$\begin{bmatrix} 8 & 2 \\ 11 & 3 \end{bmatrix}^{-1}$	<p>[1] Type #11^-1 [2] Select Simplify Basic</p>
<p>Solve AX=B for X where</p> $A = \begin{bmatrix} 1 & 2 & 4 & 1 & -1 \\ 2 & 4 & 8 & 3 & -4 \\ 1 & 3 & 7 & 0 & 3 \end{bmatrix}, B = \begin{bmatrix} 1 \\ 2 \\ -2 \end{bmatrix}$	<p>[1] Author Matrix, with 3 Rows & 5 Columns [2] Fill in the matrix table and press OK [3] Author Matrix, with 3 Rows & 1 Column [4] Fill in the matrix table and press OK If your matrices are expressions #16 and #17, [5] Type row_reduce(#16,#17) [6] Select Simplify Basic</p>

Use **File** | **Print** or the icon  to print the algebraic window output.