

Polymath Software Report

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POLYMATH – Brief History

- **CACHE Site Licenses Started in 1990**
- **Polymath Software 2012**
Currently ~ 130+ paid CACHE site licenses plus ~ 40 institutions in developing countries, used with seven textbooks, personal educational and professional versions available via Internet sales
- **Himmelblau Award to authors 2010**

Current CACHE Site Licenses

Site licenses for POLYMATH software are available through the CACHE Corporation to academic departments (mostly CHEG) to some engineering colleges and schools. Computer labs, networks, faculty, and staff receive copies on an annual basis.

Current CACHE supporting departments pay \$175 for the first year and \$125 for each successive year thereafter. CACHE nonmember institution rates are an initial \$300 for the first year and a \$250 annual fee for subsequent years.

POLYMATH Individual Educational Licenses

- **Internet Sales Currently**

4-months \$20

12-months \$30

Unlimited use \$39

- **Special Sales with Textbooks Using Polymath at 50% of the Prices Given Above**

Thus a student with the latest Cutlip, Fogler, and Himmelblau books can get over a semester of unlimited use for ONLY \$10.

POLYMATH Individual Professional License

- **Unlimited use \$189**

POLYMATH Current Activities

- **POLYMATH 6.2 Educational Site License Version now included Limited DIPPR Database and User Interface at no cost.**
- **DIPPR Add-On May be made Available**
 - **Educational Site License Add-On \$700/YR**
 - **Single User Educational License Add-On \$100/YR**
 - **Single User Professional License Add-On \$300/YR**
- **POLYMATH 7 under Development and Class Testing Underway – Completely .NET 4.0 code**

POLYMATH – Team

Michael Cutlip – University of Connecticut

**Mordechai Shacham – Ben Gurion
University of the Negev**

Michael Ely – Intel Corporation and BGU

Janet Elliott – CACHE Office

POLYMATH 7 Coming in 2014 - www.polymath.com

- 1. Linear Programming – New Simplex Solver**
- 2. Nonlinear Equations – Automated Creation of complete MATLAB m-files**
- 3. Differential Equations – Output Options, Creation of MATLAB m-file, Tabular Outputs at Desired Intervals, Export to Excel with ODE Solver Add-In**
- 4. Simulation with Parameter Estimation in Dynamical Systems**
- 5. DIPPR Database Interface for Constant and Variable Properties with output to Polymath, MATLAB and Excel**

PolyMathLite is Coming to Android in Several Months

www.polymathlite.com

Polymath Light

Check Examples Settings

Solve 2 nonlinear equations:
 # $2*x+x*y-y^2 = -290$
 # $x*\log(y/2)+x*y = 105$
 # Using the initial guess: $x(0)=2, y(0)=10$
 # The solution should be: $x=5, y=20$

$f(x) = 2*x+x*y-y^2 + 290$
 $f(y) = x*\log(y/2)+x*y - 105$
 $x(0)=2$
 $y(0) = 10$

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POLYMATH Report NLE
 Nonlinear Equations 2013-Apr-19

Calculated values of NLE variables

Variable	Value	f(x)	Initial Guess	Initial f(x)
1 x	5	-2.7E-12	2	2.1E02
2 y	20	1.3E-12	10	-8.4E01

Nonlinear equations

- $f(x) = 2*x+x*y-y^2 + 290 = 0$
- $f(y) = x*\log(y/2)+x*y - 105 = 0$



Polymath Report

POLYMATH Report NLE
 Nonlinear Equation 2013-Apr-19

Calculated values of NLE variables

Variable	Value	f(x)	Initial Guess	Initial f(x)
	0.015782	1.7E-11	0.02505	4.9E00

	variable	Value	Initial Value
1	CD	8.84266	6.11879
2	Dp	0.000208	0.000208
3	g	9.80665	9.80665
4	Re	3.65564	5.80256
5	rho	994.6	994.6
6	rhop	1800	1800
7	vis	0.000893	0.000893

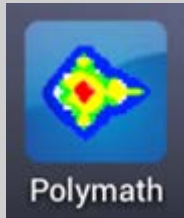
Nonlinear equations

- $f(vt) = vt^2*(3*CD*rho)-4*g*(rhop-rho)*Dp = 0$

Explicit equations

- $\rho = 994.6$
- $g = 9.80665$

Android Based PolyMathLite



Polymath Lite

Same program syntax for NLE, DEQ
Simplified Syntax for LEQ
Simplified Syntax for REG
Access to Chart Software
Direct Conversion to Matlab
Sharing Options via E-mail
and Bluetooth



Home Screen, Open Sample

