










Programmable Scientific Graphing Calculators

Equipment Comparison of a 2003 Selection

										
Product	Brand Model	Casio CFX-9850GB+	Casio Algebra FX 2.0+	Casio Class Pad 300	HP 49G	Sharp EL-9650	Sharp EL-9900	Sharp PC-E500 & PC-E500S	TI 89.00	TI Voyage 200
Price a)	Calculator EUR/\$US	72,96	93,44	158,93	166,44	69,58	74,95	151,58	154	194,19
	Calculator + PC-Connect.Kit EUR/\$US	98,40	117,15	158,93	191,39	107,06	112,43	191,53	163,37	210,84
Memory	Build in kB RAM uasbale	28	144	512	512	32	64	32	188	188
	kB RAM/ROM max. expandable		768	4.096	1.024			1.024	702	2.764
	Operating system updates possible		X	X	X				X	X
Display	Touch screen			X		X				
	Pixel resolution horizontal	128	128	160	131	132	132	240	160	240
	Pixel resolution vertical	64	64	240	64	64	64	32	100	128
	Pixel total	8.192	8.192	38.400	8.384	8.448	8.448	7.680	16.000	30.720
	Color display	X								
	Textbook / pretty print style	X b)	X b)	X	X	X	X b)		X	X
	Additional font types to install			X	X					
Graphics	Splitting screen	X	X	X		X	X		X	X
	Functions, tables	X / X	X / X	X / X	X / X	X / X	X / X	X / X	X / X	X / X
	Coordinate systems XY / POL / PARAM	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X	X / /	X / X / X	X / X / X
	Coordinate systems other	X	X	X	X	X	X	X	X	X
	Zoom	X	X	X	X	X	X	X	X	X
	Tracing	X	X	X	X	X	X	X	X	X
	3D-Graphics(XYZ-Coordinates)			X	X				X	X
Languages	3D-Graphics rotation			X	X				X	X
	Different line styles								X	X
Numbers	English / other	X /	X / X c)	X / X	X /	X /	X /	X /	X / X c)	X / X c)
	Range	$0; \pm 1 \times 10^{-99}$ $\pm 9.9... \times 10^{99}$	$0; \pm 1 \times 10^{-99}$ $\pm 9.9... \times 10^{99}$	$0; \pm 1 \times 10^{-999}$ $\pm 9.9... \times 10^{999}$	$0; \pm 1 \times 10^{-499}$ $\pm 9.9... \times 10^{499}$	$0; \pm 1 \times 10^{-100}$ $\pm 9.9... \times 10^{100}$	$0; \pm 1 \times 10^{-100}$ $\pm 9.9... \times 10^{100}$	$0; \pm 1 \times 10^{-99}$ $\pm 9.9... \times 10^{99}$	$0; \pm 1 \times 10^{-499}$ $\pm 9.9... \times 10^{499}$	$0; \pm 1 \times 10^{-999}$ $\pm 9.9... \times 10^{999}$
	Digits	12	12	15	15	12 d)	12 d)	22	14	14
	Precision e)	8,13	8,13 d)	8,13 d)	-5,87	-7,64 d)	-7,64 d)	8,45	-8,21	-7,74
Input mode	Algebraic / RPN	X /	X /	X /	X /	X /	X /	X /	X /	X /
CAS	Symbolic algebra		X	X	X				X	X
	Equation editor / writer			X	X				X f)	X f)
	Tutorial CAS, step by step solutions		X	X	X				X	X
	Integrals	X b)	X	X	X	X b)	X b)	X b)	X	X
	Derivation		X	X	X				X	X
	Differentials	X b)	X	X	X	X b)	X b)	X b)	X	X
	Limits		X	X	X				X	X
	Taylor polynoms		X	X	X				X	X
Mathematics	Equation solver	X	X	X	X	X	X	X b)	X	X
	Fractions	X	X	X	X	X	X		X	X
	Decimal-Fraction conversion			X		X	X		X	X
	Trig-, Hyp-, Log-, Exp functions	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X
	Base n: BIN, DEC, OCT, HEX	X / X / X / X	X / X / X / X	/ / /	X / X / X / X	X / X / X / X	X / X / X / X	/ / /	X / X / X / X	/ X
	ABS, INT, FRAC	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X
	Angle modes DEG, RAD, GRAD	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X	X / X / X
	Sexagesimal-decimal conversion	X	X	X	X	X	X	X	X	X
	Coordinates conversion	X	X	X	X	X	X	X	X	X
	Combination/ Random number	X / X	X / X	X / X	X / X	X / X	X / X	X / X	X / X	X / X
	Complex numbers	X	X	X	X	X	X	X	X	X
	vectors			X	X				X	X
	Boolic algebra	X	X	X	X	X	X	X	X	X
	Matrix	X	X	X	X	X	X	X	X	X
	Max. matrix size (elements total)	1.755.675	1.755.675	2.375.680	2.375.680	650250 d)	650250 d)	1.900.544	2.375.680	2.375.680
	Financial functions	X	X	X	X	X	X	X	X	X
Statistics	monovariate statistics	X	X	X	X	X	X	X	X	X
	Bivariate statistics	X	X	X	X	X	X	X	X	X
	Lin, log, exp, pot regression	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X	X / X / X / X
	other regressions	X	X	X	X	X	X	X	X	X
units	n-, t-, x ² -, f- probability testing	X	X	X	X	X	X	X	X	X
	Physical constants	22 d)	22 c) d)		40			47	20	20
	units	80 d)			127			156	122	122
Scientific libraries (build in)	units conversion	X			X			X	X	X
	Physics							X		
	Meteorology							X		
	Astronomy							X		
	Engineering							X	X c)	X c)
Date & Time	Chemistry							X		
	Periodic system of elements	X	X c)					X		
	Biochemistry							X		
Programming	Clock				X				X	X
	Calendar				X				X	X
Keyboard	Stand alone programs	X	X	X	X	99	X	X	X	X
	User defined functions			X	X			X	X	X
	User defined menus and keys			X	X			X	X	X
	Graphic commands	X	X	X	X	X b)	X b)	X b)	X	X
	Easy to learn syntax	mäßig	gut	gut	ungünstig	mittel d)	mittel	sehr gut	mäßig	mäßig
dimensions & Weight	Separate alphanumeric keyboard			X g)				X		X
	Access to letters	befriedigend	befriedigend	gut	gut	befriedigend	befriedigend	sehr gut	befriedigend	sehr gut
Connectivity	Access to functions	gut	gut	gut	sehr gut	gut	gut	sehr gut	befriedigend	befriedigend
	Width cm	9,0	8,2	8,4	8,4	8,6	8,6	22,0	8,4	18,0
	Height cm	2,5	2,0	2,1	2,3	2,0	2,3	1,9	2,5	3,7
	Depth cm	18,3	17,8	18,9	18,4	18,3	18,3	10,5	18,5	12,5
	base cm²	164,7	146,0	158,8	154,6	157,4	157,4	231,0	155,4	225,0
	Volume cm³	411,8	291,9	333,4	355,5	314,8	362,0	438,9	388,5	832,5
Connectivity	Weight g	215	280	280	264	230	240	340	363	396
	Calculator to calculator	X	X	X	X	X	X		X	X
	PC connection ser. / USB	X /	X /	/ X	X /	X /	X /	X /	X / X	X / X
	PC software	X f)	X f)	X	X c)	X f)	X f)	X f)	X f)	X f)
Connectivity	PC programming editor	X	X	X				X b)	X	X
	PC calculator emulator			X	X				X	X

a) Medium German retail price in April 2003

b) With restrictions

c) free additional official software

d) Supposition, due to lack of official information

e) Negative decadic logarithm of right point digit precision of the function: arcussin (arcuscos (arcustan (tan (cos (sin9)))))). Details at:

<http://www.calcinfo.com/>

f) Additional official software for payment

g) With touch screen

This table is based on manufacturer's official information (product data sheets, manuals, etc.)

If there are any errors please drop me a line at: dduete@gmx.de

D. Duetemeyer, 2003