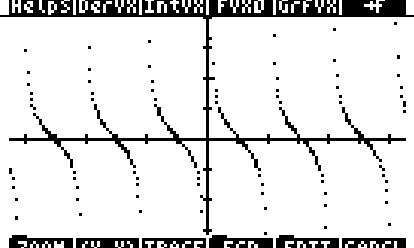
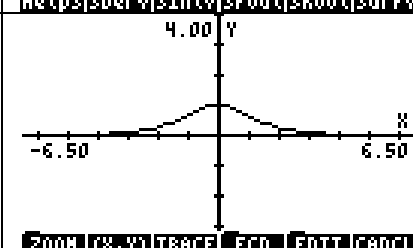
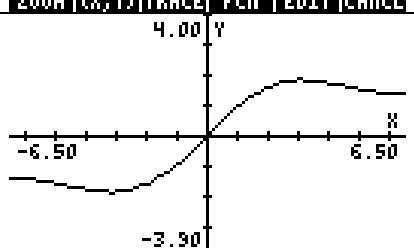
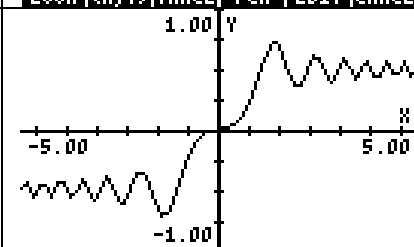
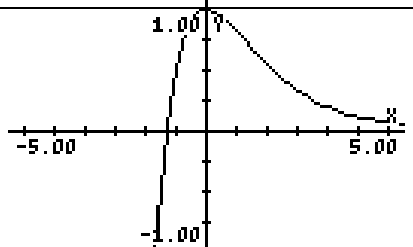
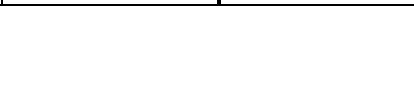

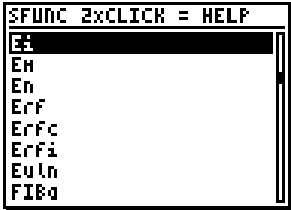
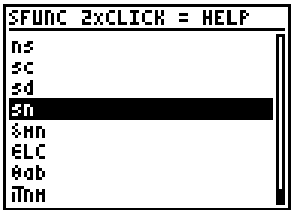
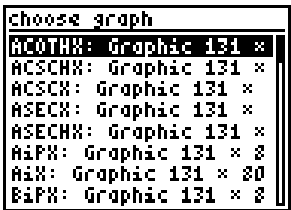
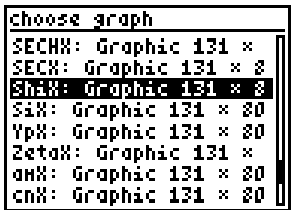
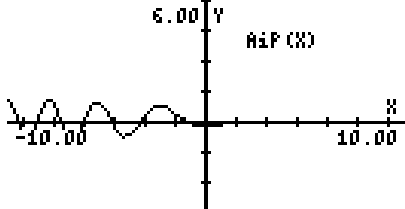
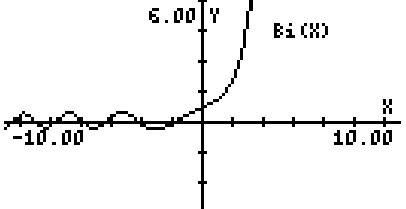
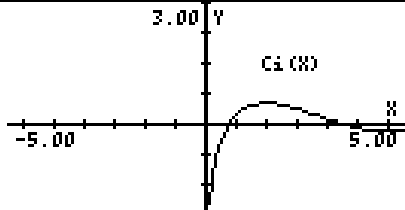
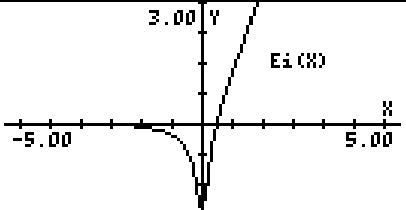
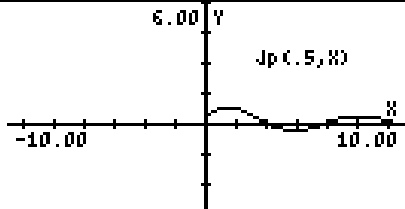
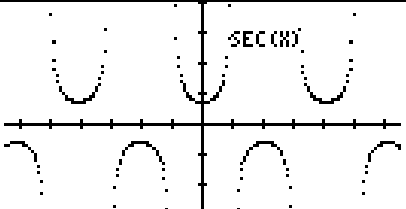
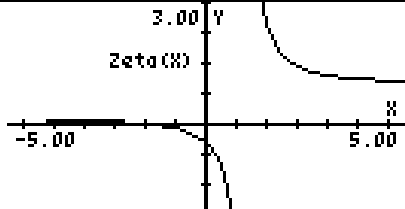
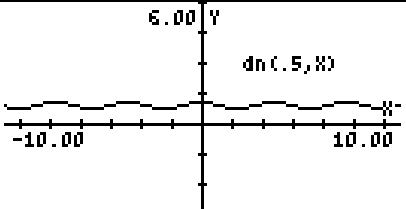
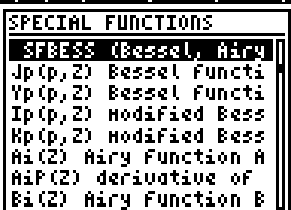
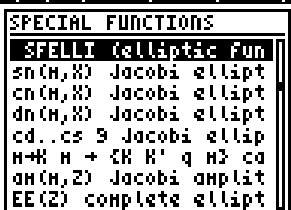


# SFUNC

→F: generates function Cot cotangent (1s)	<pre> 6: 5: 4: 3: 2: 1: COS(X) SIN(X) 'Cot' Cot   bar   LD   LOGE   SEC   CSC </pre>	<pre> 6: 5: 4: 3: 2: 1: (-1)^k * 2^(2*k+1) (2*k+1)*(2*k+1)! 121625. n*sqrt(2) 2*2 COS(2) 2 SIN(2) 2^2 'Si' Unbn   RWXCV   SDtes   R1jed   Redit   TERR </pre>
→Pn: Laguerre polyn. (2s). Edit Lagn, insert XQ before PARTFRAC, because Pan always gives numeric results. Lagn: gives n. Laguerre polynomial	<pre> 6: 5: 4: 3: 2: 1: sum from k=0 to n of (Pan(-n,k) * z^k / k!)^2 'Lagn' Lagn   Fchoo   ACOT   ACOTH   ACSC   ACSCH </pre>	<pre> 6: 5: 4: 3: 2: 1: 1-3*X+3/2*X^2+1/6*X^3 'Lagn' Lagn   Fchoo   ACOT   ACOTH   ACSC   ACSCH </pre>
SDerVX: derivative of special functions (2s)	<pre> 6: 5: 4: 3: 2: 1: ACOT(X) 1/(X^2+1) Ci(X) COS(X) X EE(X) EE(X)-ER(X) 2*X Ci   Cnx   Delta   EE   EX   EPN </pre>	<pre> 6: 5: 4: 3: 2: 1: FresC(X) - sin(n*X^2/2) / n FresC(X) FresC(X) 2*X sqrt(n)*X^2+ER(X) COLLE   EXPAN   FACTO   LNCOL   LIN   PARTF </pre>
SIntVX: integral, only of function (3s)	<pre> 6: 5: 4: 3: 2: 1: Chi(X) %Chi(X)-SINH(X) EE(X) 2/3*(X+1)*EE(X)+(X-1)*ER(X) Erf(X) -X^2 %ErF(X)+e/X Ei   EN   En   Erf   Erfc   Erfi </pre>	<pre> 6: 5: 4: 3: 2: 1: e/X Ei(X) Li(X) %Li(X)-Ei(2*Ln(X)) Si(X) %Si(X)+COS(X) Zetan   an   cd   cn   cs   dc </pre>
SFvalVX: function values (1s)	<pre> 6: 5: 4: 3: 2: 1: EE(X) 100000. (.0025,316.2157) Ci(X) (1 2 3) (.3374 ,425.1196) Li(1000000) 78627.5491622 LambW   Li   Ln   Lnx   Lv   Mult3 </pre>	<pre> 6: 5: 4: 3: 2: 1: LambW(X) 1.E15 31.1015197116 Erf(X) (100.,100.) (.9999,.0039) Ci(X)Si(X) 100. -8.04378709681E-3 Helps   DerVX   IntVX   SFval   Sroot   SGrfVX   4F </pre>
SrootVX: root of special function near a=2 (1s)	<pre> 6: 5: 4: 3: 2: 1: ACOT(X)-X .860333589019 Helps   SDerVX   SIntVX   SFval   Sroot   SGrfVX </pre>	 <pre> 200M   (X,Y)   TRACE   FCN   EDIT   CANCEL </pre>
SGrfVX: plot with only points of COT(X) (5s)	 <pre> 200M   (X,Y)   TRACE   FCN   EDIT   CANCEL </pre>	 <pre> 200M   (X,Y)   TRACE   FCN   EDIT   CANCEL </pre>
SGrfVX: plot of SECH(X) (6s)	 <pre> 200M   (X,Y)   TRACE   FCN   EDIT   CANCEL </pre>	 <pre> 200M   (X,Y)   TRACE   FCN   EDIT   CANCEL </pre>
plot of Si(X)		
SGrfVX: plot of FresS(X) (30s)		
Plot of Gamma(2,X) (10s)		

Fchoose: choose special function		$Ei(z) = \int_0^z \frac{e^t}{t} dt$ $Ei(2) = \int_0^2 \frac{e^t}{t} dt = \ln(2) + \gamma + \sum_{n=1}^{\infty} \frac{2^n}{n \cdot n!}$
2x click gives help		$Ei(z) = \int_0^z \frac{e^t}{t} dt$ $Ei(2) = \int_0^2 \frac{e^t}{t} dt = \ln(2) + \gamma + \sum_{n=1}^{\infty} \frac{2^n}{n \cdot n!}$
Gchoose: graphs of many special functions on SD card in list SFgraph		
Gchoose: OK shows graph (0.1s)		
Gchoose: OK shows graph		
Gchoose: OK shows graph		
Gchoose: OK shows graph		
Sfuncs: special functions in categories		

Sfunds: special functions in categories	<div> <div>SPECIAL FUNCTIONS</div> <div> <div>SFINT (Integrals)</div> <div>           GAMMA(a,2) incomplete            GAMMA(2) Gamma Functi            PSI(2,n) Polygamma, n            Psi(2) Digamma Functi            Beta(a,b) Beta Functi            Bab(a,b,2) incomplete            Erf(2) Gauss error Fun         </div> </div> </div> <div> <div>CANCEL</div> <div>OK</div> </div>	<div> <div>SPECIAL FUNCTIONS</div> <div> <div>SFHPV (Hypergeometric)</div> <div>           Fa(a,2) confluent hyp            FRa(a,2) confluent hy            Fab Kummer confl. hyp            FRab(a,2) Kummer conf            Fabc(a,b,c,2) hyperge            FRabc(a,b,c,2) hyperg            Fpq(2,2,2) generaliz         </div> </div> </div> <div> <div>CANCEL</div> <div>OK</div> </div>
Sfunds: special functions in categories	<div> <div>SPECIAL FUNCTIONS</div> <div> <div>SFINT (Integer Funct)</div> <div>           Bell(n) Bell nubur            Bern(n) Bernoulli num            Catal(n) Catalan numb            BFn(n,2) Bernoulli po            EFn(n,2) Euler polyne            Euln(n) Euler numbers            EULER(n) Euler totien         </div> </div> </div> <div> <div>CANCEL</div> <div>OK</div> </div>	<div> <div>SIN(X)</div> <div>X</div> <div>d1Ai(X)</div> <div>AiF(X)</div> <div>Erf(X)</div> <div>2</div> <div><math>\sqrt{\pi} \cdot e^{X^2}</math></div> </div> <div> <div>Fchoo SFunc dEval ACOT ACOTH ACSC</div> </div>
ASECH(X): derivative and integral, value for X=100 , (50,50)	<div> <div>ASECH(X)</div> <div><math>\sqrt{1-X^2-1}</math></div> <div><math>X^2-X</math></div> </div> <div> <div>CANCEL</div> <div>OK</div> </div>	<div> <div>Ci(X)</div> <div>COS(X)</div> <div>X</div> <div>X-Ci(X)-SIN(X)</div> <div>Ci(50)</div> <div>-5.63022447916E-3</div> <div>(1000.,1000.)</div> <div>(6.846E430,-1.29943)</div> </div> <div> <div>Fchoo SFunc dEval ACOT ACOTH ACSC</div> </div>
Ci(X): derivative, integral values	<div> <div>X-ASECH(X)+ASIN(X)</div> <div>(0.,1.56079616012)</div> <div>(.01,-1.560797)</div> </div> <div> <div>CANCEL</div> <div>OK</div> </div>	<div> <div>Ci</div> <div>Cnx</div> <div>Delta</div> <div>EE</div> <div>EX</div> <div>EPn</div> </div>
Ai(X)Values of Airy function (1, 0.2s)	<div> <div>Ai</div> <div>BFn</div> <div>Bab</div> <div>Bern</div> <div>Beta</div> </div>	<div> <div>Ci</div> <div>Cnx</div> <div>Delta</div> <div>EE</div> <div>EX</div> <div>EPn</div> </div>
AiP, BiP: Airy Prime, derivatives of Ai, Bi (2s)	<div> <div>(50.,50.)</div> <div>(-5.31790192895E-68)</div> <div>-30.</div> <div>-8.79684544956E-2</div> </div> <div> <div>Fchoo SFunc dEval ACOT ACOTH ACSC</div> </div>	<div> <div>(50.,50.)</div> <div>(3.91251275011E-68,</div> <div>-100.</div> <div>1.7675949</div> </div> <div> <div>Fchoo SFunc dEval ACOT ACOTH ACSC</div> </div>
Ei(X), derivative and integral, value for X=100 , (50,50) (1,2,0.2, 0.2s)	<div> <div>Ei(X)</div> <div>X</div> <div><math>\frac{e^X}{X}</math></div> <div>X-Ei(X)-e^X</div> <div>2.72E41</div> <div>(3.61E19,-6.46E19)</div> </div> <div> <div>CANCEL</div> <div>OK</div> </div>	<div> <div>(5.,5.)</div> <div>(.930379,.038936)</div> <div>(.069621,-.038936)</div> <div>(.038936,.930379)</div> </div> <div> <div>Fchoo SFunc dEval ACOT ACOTH ACSC</div> </div>
Erf, Erfc, Erfi X=(5, 5) (0.6s)	<div> <div>Dx</div> <div>EE</div> <div>EX</div> <div>Ei</div> <div>EW</div> <div>EN</div> </div>	<div> <div>Erf</div> <div>Erfc</div> <div>Erfi</div> <div>FRa</div> <div>FRab</div> <div>FRabc</div> </div>
Fab: hypergeometric 1F1 values for {a b X}=.. (1s)	<div> <div>(-2, -3, 100.3</div> <div>1734.33333333</div> <div>(-3, -2, 100.3</div> <div>-9.99999999999E499</div> <div>(1, 2, (10.,10.))</div> <div>(-1523.28213631,324.99589719)</div> <div>(3.5 -1.5 -100.3</div> <div>-2.32458441286E-34</div> </div> <div> <div>Fa</div> <div>Fab</div> <div>Fabc</div> <div>FN</div> <div>FRaSC</div> <div>FRaSS</div> </div>	<div> <div>(1.,2.)</div> <div>(3.,4.)</div> <div>(5.,6.)</div> <div>(-8.28600924209,-9.</div> <div>7.</div> <div>1.</div> <div>500.</div> <div>3.27084286885E230</div> </div> <div> <div>Fchoo SFunc dEval ACOT ACOTH ACSC</div> </div>
Fab: hypergeometric 1F1 values for {a b c X}=..(2, 0.5s)	<div> <div>Fa</div> <div>Fab</div> <div>Fabc</div> <div>FN</div> <div>FRaSC</div> <div>FRaSS</div> </div>	<div> <div>Fchoo SFunc dEval ACOT ACOTH ACSC</div> </div>
Fabc: hypergeometric 2F1 values for {a b c X}=..(1s)	<div> <div>(1, -2, 5, 1000.3</div> <div>66267.6666665</div> <div>(-3, -3, 2, 5.3</div> <div>129.75</div> <div>(1.5 2.5 -3.5 100.3</div> <div>(0.,2.3955566328E-3)</div> <div>(1, 2, -3, 5.3</div> <div>9.99999999999E499</div> </div> <div> <div>Fa</div> <div>Fab</div> <div>Fabc</div> <div>FN</div> <div>FRaSC</div> <div>FRaSS</div> </div>	<div> <div>(4 5)</div> <div>(1 2 3)</div> <div>20</div> <div>49025.4501906</div> <div>((1.,2.)(3.,4.))</div> <div>(5 6)</div> <div>(7.,8.)</div> <div>(.02884347167,-8.60</div> </div> <div> <div>Fchoo SFunc dEval ACOT ACOTH ACSC</div> </div>
Fpq: generalized hyp.geom. PFQ (4, 7s)	<div> <div>Fa</div> <div>Fab</div> <div>Fabc</div> <div>FN</div> <div>FRaSC</div> <div>FRaSS</div> </div>	<div> <div>Fchoo SFunc dEval ACOT ACOTH ACSC</div> </div>
FRab: hypg. regularized 1F1 values for {a b X}=.. (1s)	<div> <div>(-2, -3, 100.3</div> <div>0.</div> <div>(-3, -2, 100.3</div> <div>-1000000.</div> <div>(1, 2, (10.,10.))</div> <div>(-1523.28213627,324.99589719)</div> <div>(3.5 -1.5 -100.3</div> <div>-9.82629735973E-35</div> </div> <div> <div>Erf</div> <div>Erfc</div> <div>Erfi</div> <div>FRa</div> <div>FRab</div> <div>FRabc</div> </div>	<div> <div>(1, -2, 5, 1000.3</div> <div>2761.15277778</div> <div>(-3, -3, 2, 5.3</div> <div>129.75</div> <div>(1.5 2.5 -3.5 100.3</div> <div>(0.,2.36953439386E-3)</div> <div>(1, 2, -3, 5.3</div> <div>18.3105468751</div> </div> <div> <div>Erf</div> <div>Erfc</div> <div>Erfi</div> <div>FRa</div> <div>FRab</div> <div>FRabc</div> </div>
FRabc: hypg. regularized 2F1 values for {a b c X}=..(1s)	<div> <div>Erf</div> <div>Erfc</div> <div>Erfi</div> <div>FRa</div> <div>FRab</div> <div>FRabc</div> </div>	<div> <div>Erf</div> <div>Erfc</div> <div>Erfi</div> <div>FRa</div> <div>FRab</div> <div>FRabc</div> </div>

Uab: Tricomi confluent hypergeometric function, values for {a b X}=.. (1s)	<div> <div> <div>24. -1. 2.3</div> <div>6.08316550001E-4</div> <div>23. 6. 5.3</div> <div>.02144</div> <div>210. 3. 5.3</div> <div>7.14225714222E-11</div> <div>25. -5. 50.3</div> <div>0.</div> </div> <div> <div>Fchoo Gchoo SFunc DEVal IEVal ACOT</div> </div> </div>	<div> <div> <div>-2. -3. 10.3</div> <div>146.</div> <div>-2. 1. 10.3</div> <div>62.</div> <div>21. 2. 1000.3</div> <div>.001</div> <div>{(1.,2.) (3.,4.) 50.3</div> <div>(.002054,-.012734)</div> </div> <div> <div>Fchoo Gchoo SFunc DEVal IEVal ACOT</div> </div> </div>
LambW: Lambert W (1-2s)		
Yml: spherical harmonics (5s)	<div> <div> <div>50000.</div> <div>8.6609534677</div> <div>1.E300</div> <div>684.24720863</div> </div> <div> <div>Fchoo SFunc DEVal ACOT ACOTH ACSC</div> </div> </div>	<div> <div> <div><math>\sqrt{\pi} \cdot \sqrt{210}</math></div> <div><math>\cdot 15 \cdot \sin(\theta)^2 \cdot \cos(\theta)</math></div> <div><math>120 \cdot \pi</math></div> </div> <div> <div>Fchoo SFunc DEVal ACOT ACOTH ACSC</div> </div> </div>
Erf, Ierf: Gauss error, inverse (1s)		
FresC,S: Fresnel Cosine, Sine (1s)	<div> <div> <div>(5.,5.)</div> <div>(.930379339305,.038)</div> <div>.863</div> <div>1.051507</div> </div> <div> <div>Hn Hu IErf IERfc Ip Jp</div> </div> </div>	<div> <div> <div>(5.,5.)</div> <div>(2.06081608064E32,2)</div> <div>-50000.</div> <div>-.499936338023</div> </div> <div> <div>Fab Fabc Fpq Fac2 Fn FresC</div> </div> </div>
Jp(1,X), Ai(X), Yp(1,X): values for X=5 (1s,2.5s,3s)	<div> <div> <div>Jp(1.,X)</div> <div>-.327579137612</div> <div>Ai(X)</div> <div>.000108343</div> <div>Yp(1.,X)</div> <div>.1479</div> </div> <div> <div>Helps +dF DerVn IntVn FVn0 +F</div> </div> </div>	<div> <div> <div>Jp(1.,X)</div> <div>1.04726134638E-2</div> <div>Ai(X)</div> <div>0.</div> <div>Yp(1.,X)</div> <div>.0341</div> </div> <div> <div>Helps +dF DerVn IntVn FVn0 +F</div> </div> </div>
sn,cn,dn,am: Jacobi elliptic functions, amplitude, value for X=100 (3s)	<div> <div> <div>sn(.5,X)</div> <div>.119601928057</div> <div>cn(.5,X)</div> <div>-.992821927042</div> <div>dn(.5,X)</div> <div>.996417427292</div> <div>am(.5,X)</div> <div>84.7031127244</div> </div> <div> <div>Helps +dF DerVn IntVn FVn0 +F</div> </div> </div>	<div> <div> <div>(5.000,5.000)</div> <div>(1.435,-2.046)</div> <div>(0.773,0.643)</div> </div> <div> <div>Ds EE EK Ei En Eo</div> </div> </div>
Pnoαβ: Jacobi polynomial (5s)		
Yml: spherical harmonics (6s)	<div> <div> <div><math>\frac{1}{2} + \frac{-7}{2} \cdot x + \frac{-7}{2} \cdot x^2 + \frac{21}{2} \cdot x^3</math></div> </div> <div> <div>Fchoo SFunc DEVal ACOT ACOTH ACSC</div> </div> </div>	<div> <div> <div><math>-\left(\frac{\sqrt{5} \cdot \sqrt{30}}{12 \pi} \cdot 3 \cdot \sin(\theta) \cdot \cos(\theta) \cdot e^{i \phi}\right)</math></div> </div> <div> <div>Sa Ta Un Ynl Yn Yp</div> </div> </div>
Pan: Pochhammer symbol values (1s)	<div> <div> <div>720.</div> <div>-5.</div> <div>2.</div> <div>20.</div> <div>(1.,2.)</div> <div>(3.,4.)</div> <div>(-.8043,.223)</div> </div> <div> <div>Pan Perm Pnl Pn Pno3 Qn</div> </div> </div>	<div> <div> <div>{1 2 3 4}</div> <div>1</div> <div>{1 2 4 3}</div> <div>-1</div> <div>{1 2 3 1}</div> <div>0</div> </div> <div> <div>sc sd sn snn ELC gab</div> </div> </div>
εLC: Levi Civita symbol		
Bell: Bell number (1s) Catal: Catalan number (1s) Lucas: Lucas number (2s)	<div> <div> <div>15</div> <div>1382958545.</div> <div>20</div> <div>6564120420</div> <div>30</div> <div>1860498</div> </div> <div> <div>Lnx Lucas Lv MOEBn Multi OPn</div> </div> </div>	<div> <div> <div>7</div> <div>9</div> <div>546</div> <div>80</div> <div>12</div> <div>159027</div> </div> <div> <div>S1nn S2nn SEC SECH Shi SE</div> </div> </div>
S1mn, S2mn: 1., 2. Stirling numbers (2, 4s)		

Mathematical constants	A Glaisher constant 'A=EXP(1/12-d12eta(-1))' 'A=1.2824271291006' C Catalan constant 'C=E(k=0,w,t-1)*K/(2*k+1)^2' 'C=.915965594177' K Rhinchin constant 'K=PI(k=1,w,(1+1/(k*(k+2)))^(LN(k))' 'K=2.685452001065' gamma Euler Mascheroni constant 'gamma=lim(E(k=1,n,1/k)-LN(n),n->w)' 'gamma=.5772156649015' GRAPH	9: 8: 7: 6: 5: 4: 3: 2: 1: Echo SFunc DEqual ACOT ACOTH ACSC
MOEBn: Moebius function Perm: permutation number (1, 1s)	4: 3: 2: 1: Zeta IntVX STONE prog2 MOEBn Eorue	123 1 (1 3 2 8 5 9 7) 4 1*(1+w) 2 2: $\frac{\pi}{6}$ 9: $\frac{-1 \cdot \text{PSI}(1,8)}{40320}$ 14: $\frac{2 \cdot \pi}{18243225}$ OBJ+ +ARRAY +LIST +STR +TAG +UNIT
Zeta: Riemann Zeta function symbolic values (1s)	4: 3: 2: 1: Zeta IntVX STONE prog2 MOEBn Eorue	1: 2: 3: 4: 5: 6: 7: 8: 9: Zeta IntVX STONE prog2 MOEBn Eorue
Zeta: Riemann Zeta function numeric real values (0.5s)	9: 8: 7: 6: 5: 4: 3: 2: 1: Zeta IntVX STONE prog2 MOEBn Eorue	1: 2: 3: 4: 5: 6: 7: 8: 9: Zeta IntVX STONE prog2 MOEBn Eorue
Zeta: Riemann Zeta function complex numeric values (1-3s)	9: 8: 7: 6: 5: 4: 3: 2: 1: Zeta IntVX STONE prog2 MOEBn Eorue	limited precision 7: 6: 5: 4: 3: 2: 1: Zeta IntVX STONE prog2 MOEBn Eorue
Zeta: evaluate in algebraic expressions  Zeta: 2xclick gives help	5: 4: 3: 2: 1: Zeta ZetaM an cd cn cs	Zeta(2) RIEMANN ZETA FCT Zeta(s)=E(k=1,w,k^(-s)) RE(s)>1 =PI(p=2,w,1/(1-p^(-s))) EULER PROD =(1-2^(1-s))^(-1)* E(k=1,w,(-1)^(k-1)/k^s) RE(s)>0 =1/(s-1)+gammaE(k=1,w, (-1)^k*k/k!*((s-1)^k) AT s=1 gamma=STIELTJES CONST (SEE HELP) FUNCTIONAL EQN FOR COMPLEX s: Zeta(1-s)=2/(2*pi)^s* GAMMA(s)*COS(pi*s/2)*Zeta(s) GRAPH