

H LIKE FUNCTIONS ARBITRARY Z

MANCHESTER UNIVERSITY COMPUTING MACHINE LABORATORY

ROUTINE

like functions
New routine.

Date June 18th

QFN/k

/	K/k/		E	K/D/	
/	IN/F		/	EQO	
E	: I/U		E	Dk/P	$t.b.a = RK_{ij} + RZ(S_{ij} + d_{ij})E_i$
@	II/U	$f.b.d = (S_{ij} + d_{ij})$	@	±AQO	$B_j = z_j$
A	C@/F	$A_F = z$	A	NNUF	
:	: / ± 0		:	VA/U	
S	Dk/P	$f.b.a = z(S_{ij} + d_{ij})$	S	MA/U	
I	I/QO		I	VATF	
U	CU/P		U	VATA	
½	VATA		½	VAT/	
D	VA/F		D	MA/J	$A_F = -E_j$
R	: I/U		R	REQO	
J	II/U	$f.b.d = z(S_{ij} + d_{ij})$	J	Dk/P	
N	C@/F		N	NEQO	
F	F/±0		F	CU/P	
C	Dk/P		C	VATA	$[VA] = RK_{ji}$ ✓
K	K/QO		K	T@/F	
T	CU/P		T	: I/U	
Z	INTA	$[IN] = (S_{ij} + d_{ij})z^2$	Z	II/U	$f.b.d = (1-z)$
L	/N/F		L	: N/F	
W	W/E0		W	kI/U	
H	Dk/P	$f.b.a = RZ(S_{ij} + d_{ij})$	H	RI/U	$t.b.a = RK_{ij}$
Y	kIT/		Y	VA/F	
P	: I/TA		P	PEQO	
Q	RIT/		Q	Dk/P	
O	I/TA		O	OEQO	
B	: N/F		B	CU/P	
G	kI/U		G	: N/TA	$[N] = RK_{ij} + (1-z)RK_{ji}$ ✓
"	RI/U	$f.b.a = RK_{ij}$	"	C@/F	IN/F zR
M	CFTK		M	ME±0	
X	VATA		X	Dk/P	$f.b.a = (1-z)ZR$ ✓
V	VAQO	$B_j = z_j$	V	kIT/	V_{EQO}
E	NNUF	$A_F = E_i$	E	: I/TA	CU/P

Mod to Original

lines

LA | ±±//
WA | MAE/

Q/C/k
KLJC ±±//
MAE/
Q/C/k

Everything else on in main program sheet for ORG.

Now prints out $(S_{ij} + d_{ij})$. $R[K_{ij} + (1-z)K_{ji}]$ $R[S_{ij} + (1-z)L_{ij}]$ A_{ij} B_{ij}

ROUTINE

Date _____

C	KRL	A
/	RIT /	/
E	IETA	E
@	/N/F	@
A	Ae k 0	A
:	Dk / P	:
S	Se Q 0	S
I	CU / P	I
U	KITA	U
1/2	NQ / J	1/2
D	//EA	D
R	Te / P	R
J	TS //	J
N	kk //	N
F	XAE /	F
C	/// /	C
K	kw : /	K
T	/// /	T
Z	kw / T	Z
L		L
W		W
H		H
Y		Y
P		P
Q		Q
O		O
B		B
G		G
"		"
M		M
X		X
V		V
E		E

UEN

f.b.d. = (1-z)z
A_F = R

[kI] = (1-z)Rz ✓

ret for z=1

Case for next Routine
z
(1-z)
By

NOT REPEATED

As written prints out z²S_{ij} and z²B_{ij}
to correct this:

MMA@ 1/2 KZ 1/2 E 1/2 NTA MMARL
QEC 1/2 KIDE 1/2 N/F QEC 1/2 1/2 H.

MMARL

Programme Sheet B

ROUTINE

Date _____

QFN/k			E K/D 1/2		
/	K/K/		/	K/D 1/2	
E	/ / T A	$K/D = (1-2)R_2$	E	/ / / /	00 1
@	M / / :	Store S _{2,3}	@	T " H @	01 $8/27\sqrt{2}$
A	X / / :	Table S _{2,3}	A	F F V £	
:	G U / C	Mults = 20	:	/ / / /	02
S	E F / N		S	/ / / /	
I	M U / C	Mults = 2	I	1/2 Q V N	03 $3/16\sqrt{3}$
U	A F / N		U	" F M £	
1/2	P U T A		1/2	1/2 Q V N	04
D	P U Q O	$B_7 = (20i + 2j)$	D	M F M £	
R	V U / C	Mults = 2 ¹⁰	R	K N D @	05
J	/ E U F	$A_F = \left(\frac{L_{ij}}{2}\right)$	J		
N	V / / :	Rest S _{2,3}	N	J D P A	06 $0.6912 = 2^{16}/3125$
F	: I / U		F	v k M £	
C	I I / U	f.b.d = $\left(\frac{L_{ij}}{2}\right)$	C		07
K	E N / F		K		
T	K I / U		T		08
Z	R I / U	f.b.u = RJ_{ij}	Z		
L	/ / / F	$A_F = (1-2)R_2$	L		09
W	W / Q O		W		
H	D k / P		H	f f / /	E C / / P
Y	Y / Q O		Y	K P D I	10
P	C U / P		P	/ / / /	
Q	E N T A	$[EN] = RJ_{ij} + (1-2)RL_{ij}$	Q	/ k / /	11 $1/4$
O	Q U / J	} call in part as sub-routine.	O	/ / / /	12
B	/ / E A			B	/ / / /
G	" / / P		G	@ O £ J	13 $552/3125\sqrt{6}$
"	T S / /		"	U D M £	
M	£ A R :		M		14
X	V A C :		X		
V	£ A C :		V		15
£	/ / / /		£		

HE

at all lines with iss are a page.

TRACK(XA)

Programme Sheet B

ROUTINE _____

Date _____

Q	K / R @			A		
/	Q E V W	16	$44/729\sqrt{2}$	/	K @ J @	32
E	X R 9 £			E		
@		17		@	M O Z A	33
A				A	U C M £	$1/9$
:		18		:		34
S				S		
I		19		I		35
U				U	K 1/2 J @	
1/2		20		1/2	M F C "	36
D				D	D D 9 £	$51864/823543\sqrt{3}$
R		21		R		37
J	K N R I			J		
N	/ / / /	22	$1/4$	N		38
F	/ £ / /			F		
C	/ / / /	23		C		39
K	/ / / /			K		
T	F E : R	24	$0.06144 = \frac{192}{3125}$	T		40
Z	Q K G £			Z		
L		25		L		41
W				W		
H		26		H		42
Y	K P R @			Y		
P	B B @ D	27	$16\sqrt{5}/729\sqrt{2}$	P		43
Q	M 1/2 9 £			Q	K O J @	
O		28		O	M O Z A	44
B				B	U C M £	$1/9$
G		29		G		45
"				"		
M		30		M		46
X				X	K V J @	
V		31		V	J S U 9	47
£				£	Y 1/2 9 £	$17664\sqrt{5}/823543\sqrt{2}$

PYD
 M X A R K ← { K O 1/2 E HE/J
 K H D @ £ £ // EC //
 PYD

Programme Sheet B

ROUTINE

Date

QFN/2

: KED		S KED	
/	48	/	64
E		E	
@	49	@	65
A		A	K : D @
:	50	:	/ / / /
S		S	/ k M t
I	51	I	
U		U	
1/2	52	1/2	
D		D	
R	53	R	
J		J	
N	54	N	
F	K C 1/2 @	F	
C	M O Z A	C	
K	K C M t	K	
T	56	T	
Z		Z	
L	57	L	
W	K H 1/2 @	W	
H	C W K A	H	
Y	E C O t	Y	
P	59	P	
Q		Q	
O	60	O	
B		B	K 9 D @
G	61	G	/ / / /
"		"	/ k M t
M	62	M	
X		X	
V	63	V	
£		£	

1/9

55296/823943J6

1/16

1/16

Programme Sheet B

ROUTINE _____

Date _____

I	KRL		u	KRT	
/		80	/		96
@		81	@		97
A		82	:		98
S		83	S	K I J @	99
I		84	U	///	$\frac{1}{16}$
U		85	U	$\frac{1}{2}$ M $\frac{1}{2}$	
$\frac{1}{2}$		86	$\frac{1}{2}$		
D		87	D		
R		88	R		
J		89	J		
N		90	N		
F		91	F		
C		92	C		
K	K T R @	93	K		
T	///	94	T		
Z	$\frac{1}{2}$ M $\frac{1}{2}$	95	Z		
L			L		
W			W		
H			H		
Y			Y		
P			P		
Q			Q	K O J @	
O			O	$\frac{1}{2}$ $\frac{1}{2}$ //	line to print.
B			B	EC //	
G			G	H // //	
"			"	///	
M			M	e // //	
X			X	///	
V			V	// E //	
E			E	///	

PBJ
MVAR $\frac{1}{2}$

Programme Sheet B

ROUTINE *H like parabols z → z'*

Date *June 18th*

<i>QFN/2</i>			<i>K/D/</i>	
<i>K/k/</i>			<i>E</i>	<i>K/D/</i>
/ R / T ‡			/ W F P /	
E ‡ / T ‡			E E S T I	
@ / A / :	<i>1/2 A / P</i>		@ S S T I	
A E A / :			A M A T A	
: @ A / :			: W K P /	
S A A / :			S E S T I	
I Y : / C			I S S T I	
U : A P O			U V A T A	
<i>1/2</i> M C / F			<i>1/2</i> M A / :	
D : I / U			D / R / F	
R I I / U			R R E ‡ O	
J / F P /			J D ‡ / P	
N E S T I			N N E Q O	
F S S T I			F C U / P	
C V A T A			C / R T A	
K V A / :			K / J / F	
T E R / F			T T E ‡ O	
Z Z / ‡ O			Z D ‡ / P	
L D ‡ / P			L L E Q O	
W W / Q O			W C U / P	
H C U / P			H / J T A	
Y @ R T A			Y M A T /	
P V A T /			P v : T I	
Q v : T I			Q M A T A	
O V A T A			O M A / :	
B V A / :			B V A / :	
G E : P G			G / R / F	
" / / / T			" " E ‡ O	
M V C / F			M D ‡ / P	
X : I / U			X X E Q O	
V I I / U			V C U / P	
E S A P O			E / R T A	

M:Q:2
KQ:EE LAIP
K:JI
M:R:2

prints out

ROUTINE

2-2'

Date June 18th

K/RW		K/J ^{1/2}	
@	A	A	
/	/ J / F	/	Z / / :
E	E e t o	E	H / E I
@	D k / P	@	H / / k
A	A e R o	A	K / e N
:	C u / P	:	D / / /
S	/ J T A	S	N / / /
I	V A T /	I	M A e k
U	v : T I	U	M A R k
1/2	V A T A	1/2	1/2 A / /
D	V A / :	D	N A Z O
R	E : P G	R	/ A / :
J	E / / T	J	F A / P
N	I A / :	N	H S I /
F	O e T /	F	@ / / /
C	L R T A	C	
K	G e T /	K	
T	T R T A	T	
Z	u A / :	Z	
L	D S / Q	L	
W		W	
H		H	
Y		Y	
P		P	
Q	K O R ^{1/2}	Q	
O		O	
B		B	
G		G	
"		"	
M		M	
X		X	
V		V	
E		E	

z'
(1-z')

z'
1-z'
 $(\frac{z'}{2})^{3/2}$
 $(\frac{z'}{2})$

set B'

M^{1/2} : R^{1/2}

Get lines oe → ze by substituting tape
for each z → z'
Numbers are in machine positional form as usual.

$$M \in R^{\frac{1}{2}}$$

put basis $oc \rightarrow ze$ by substituting tape
by each $z \rightarrow z'$
numbers are in machine postail form as
usual.