

Funktion		$F(x) = \frac{1}{\pi} \text{ arc tg } x$		Strimmellængde 0-116	
Koder: ThF, OGJ		Dato: 27.6.57	Prøvekørt af:	Dato:	
Indhops- adresser	Udhops- adresser	Indgang	Udgang	Maks. or- dreantal	Maks. køretid
0A8	85A8	$x = C(AR)$	$F(x) = C(AR)$	97	$176\frac{1}{2}$ AT
	eller		$F(x) = C(MR)$		
3A8	89A8	$x' = C(FAR 1)$ $x'' = C(FAR 2)$	$F'(x) = C(FAR 1)$ $F''(x) = C(FAR 2)$	96	$175\frac{1}{2}$ AT
Hopform: Indekshop			Begyndelsesadresse: Lige		
Grundparametre: Ingen			Programparametre: Ingen		
Undersekvenser: Ingen			Arbejdsceller: I sekvensen		
Perm. konst.: 2039, 2040, 2042, 2043			Maks. fejl: $7 \cdot 10^{-12}$		

Beskrivelse:

Sekvensen udregner, af hensyn til den hurtigere konvergens,

$$\frac{1}{\pi} \text{ arc tg } y = \frac{1}{\pi} (\text{arc tg } |x| - \text{arc tg } \alpha) = \frac{1}{\pi} \text{ arc tg } \frac{|x| - \alpha}{1 + \alpha|x|}, \text{ hvor } \alpha = \text{tg } \frac{\pi}{8} = \sqrt{2} - 1.$$

Derefter beregnes $\frac{1}{\pi} \text{ arc tg } |x| = \frac{1}{\pi} (\text{arc tg } y + \frac{\pi}{8})$ og $F(x) = \frac{1}{\pi} \text{ arc tg } x$,

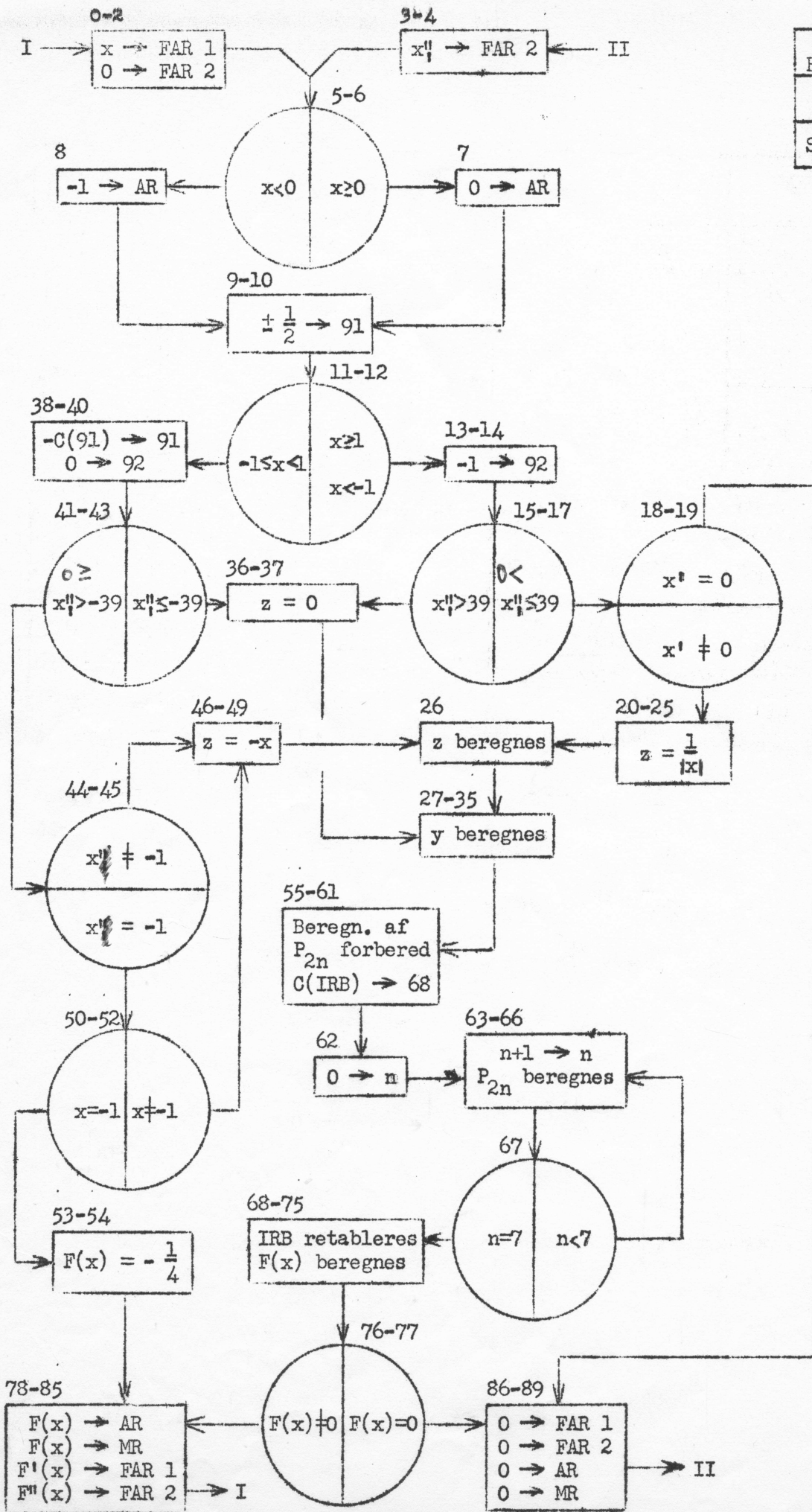
idet $F(x)$ og x har samme fortegn.

Såfremt x ligger uden for intervallet $-1 \leq x < 1$, indføres $|z| = \frac{1}{|x|}$ i udtrykket for y .

Man har $\frac{1}{\pi} \text{ arc tg } |x| = \frac{1}{\pi} (\frac{\pi}{2} - \text{arc tg } |z|)$

$\frac{1}{\pi} \text{ arc tg } y$ beregnes af sekvensen ved et approksimationspolynomium af 15. grad

$$\frac{1}{\pi} \text{ arc tg } y = \frac{1}{2} y (b_1 + b_3 y^2 + \dots + b_{15} y^{14})$$



SEKVENSS BETEGNELSE	
$\frac{1}{\pi} \arctan t$	
Side 2	5

Indgang I	→ 0	2000,A ,08	x → FAR 1	
	1	2003,A ,68	0 → FAR 2	
	5 ← 2	<u>5,A8,10</u>	hop	
Indgang II	→ 3	2043,A ,61	-1024 → AR v.adr. (perm. konst.)	
	4	2003,A ,26	x'' → FAR 2 adr.	
	2 → 5	2000,A ,40	x' → AR	
	8 ← 6	<u>8,A8,51</u>	hop hvis x < 0	
	9 ← 7	<u>9,A8,50</u>	0 → AR, hop	
	6 ↔ 8	2040,A ,60	-1 → AR	(perm. konst.)
	7 ↔ 9	2043,A ,20	$\frac{1}{2} + C(AR) \rightarrow AR$	(perm. konst.)
	10	91,A8,28	$\pm \frac{1}{2} \rightarrow$ hac 91,A8 for $x \geq 0$	(arb.cel.)
	11	2003,A ,61	-x'' → AR v. adr.	
	38 ← 12	<u>38,A8,11</u>	hop hvis $-1 \leq x < 1$	
	13	2040,A ,60	-1 → AR	(perm. konst.)
	14	92,A8,28	-1 → hac 92,A8	(arb.cel.)
	15	2003,A ,61	-x'' → AR v. adr.	
	16	90,A8,20	-x'' + 39 → AR v. adr.	
	36 ← 17	<u>36,A8,51</u>	hop hvis x'' > 39	
	18	2000,A ,43	- x' → AR	
	19	<u>86,A8,11</u>	hop hvis x' = 0	
	20	2003,A ,60	x'' → AR v. adr.	
	21	2039,A ,20	-z'' = x'' - 1 → AR v. adr. (perm. konst.)	
	22	26,A8,29	-z'' → 26,A8 adr.	
	23	91,A8,60	$\pm \frac{1}{2} \rightarrow AR$	
	24	2000,A ,0B	$ z' = \pm \frac{1}{2} : x' \rightarrow MR$	
	25	0,A ,07	z' → AR	
(22)	49 → 26	(0),A ,0F	z → AR	
(47)	27	2042,A ,24	z → MR	(perm. konst.)
	28	114,A8,0A	$\frac{1}{2} \alpha z \rightarrow AR$	
	37 → 29	2043,A ,20	$\frac{1}{2}(1 + \alpha z) \rightarrow AR$	(perm. konst.)
	30	94,A8,08	$\frac{1}{2}(1 + \alpha z) \rightarrow 94,A8$	(arb.cel.)
	31	0,A ,07	z → AR	
	32	1,A ,0D	$\frac{1}{2} z \rightarrow AR$	
	33	114,A8,01	$\frac{1}{2}(z - \alpha) \rightarrow AR$	
	34	94,A8,0B	$y = (z - \alpha) : (1 + \alpha z) \rightarrow MR$	
	55 ← 35	<u>55,A8,10</u>	hop	
17,43	→ 36	2042,A ,64	z = 0 → AR og MR	(perm. konst.)
	29 ← 37	<u>29,A8,10</u>	hop	
	12 → 38	92,A8,48	0 → hac 92,A8	(arb.cel.)
	39	91,A8,21	$\pm \frac{1}{2} \rightarrow AR$	

SEKVENNS BETEGNELSE	
$\frac{1}{\pi}$ arc tg	
Side 3	5

25028

08

SEKVENSS BETEGNELSE	
$\frac{1}{\pi}$ arc tg	
Side 4	5

40	91,A8,28	$\mp \frac{1}{2} \rightarrow$ hac 91,A8 for $x \geq 0$ (arb.cel.)
41	2003,A ,61	$-x'' \rightarrow$ AR v. adr.
42	90,A8,21	$-x'' - 39 \rightarrow$ AR v. adr.
36 \leftarrow 43	<u>36,A8,11</u>	hop hvis $x'' < -38$
44	2000,A ,42	$ x' \rightarrow$ AR
50 \leftarrow 45	<u>50,A8,51</u>	hop hvis $x'' = -1$
46	2003,A ,61	$-x'' \rightarrow$ AR
52 \rightarrow 47	26,A8,29	$-x'' \rightarrow$ 26 adr.
48	2000,A ,42	$ x' \rightarrow$ AR
26 \leftarrow 49	<u>26,A8,10</u>	hop
45 \rightarrow 50	2003,A ,63	$- x'' \rightarrow$ AR
53 \leftarrow 51	<u>53,A8,11</u>	hop hvis $x'' = 0$, d.v.s. $x = -1$
47 \leftarrow 52	<u>47,A8,10</u>	hop
51 \rightarrow 53	116,A8,64	$-\frac{1}{4} \rightarrow$ AR og MR
79 \leftarrow 54	<u>79,A8,10</u>	hop
35 \rightarrow 55	0,A ,07	$y \rightarrow$ AR
56	94,A8,08	$y \rightarrow$ 94,A8
57	94,A8,0A	$y^2 \rightarrow$ AR
58	2042,A ,24	$y^2 \rightarrow$ MR
59	112,A8,40	$b_{15} \rightarrow$ AR
60	96,A8,08	$b_{15} \rightarrow$ 96,A8 (arb.cel.)
61	68,A8,34	C(IRB) \rightarrow 68,A8 adr.
62	14,A ,35	14 \rightarrow IRB
67 \rightarrow 63	2046,B ,35	$2(7 - n) \rightarrow$ IRB, $1 \leq n \leq 7$
64	96,A8,0A	$y^2 \cdot P_{2(n-1)} \rightarrow$ AR
65	98,B8,00	$P_{2n} \rightarrow$ AR
66	96,A8,08	$P_{2n} \rightarrow$ 96,A8 (arb.cel.)
63 \leftarrow 67	63,A8,33	hop hvis $n < 7$
(61) 68	(0),A ,35	IRB retableres
69	94,A8,44	$y \rightarrow$ MR
70	96,A8,0A	$\frac{2}{\pi}$ arc tg $y \rightarrow$ AR
71	116,A8,20	$\frac{2}{\pi}$ arc tg $ z = \frac{1}{4} + \frac{2}{\pi}$ arc tg $y \rightarrow$ AR
72	92,A8,06	$-\frac{2}{\pi}$ arc tg $ x = -(C(92,A8) - \frac{2}{\pi}$ arc tg $ z) \rightarrow$ AR
73	92,A8,45	$\frac{2}{\pi}$ arc tg $ x \rightarrow$ MR
74	91,A8,2A	$F(x) = \frac{1}{\pi}$ arc tg $x \rightarrow$ AR
75	96,A8,08	$F(x) \rightarrow$ 96,A8 (arb.cel.)
76	96,A8,43	$- F(x) \rightarrow$ AR
86 \leftarrow 77	<u>86,A8,11</u>	hop hvis $F(x) = 0$
78	96,A8,44	$F(x) \rightarrow$ AR og MR
54 \rightarrow 79	2003,A ,0E	$F''(x) \rightarrow$ AR, $-F''(x) \rightarrow$ FAR 2 adr.

Es del hop angtaget



lagre IRB (arb.cel.)
hop til inds program
hop til 71A8 (perm. konst.)

	80	2000,A ,08	$F'(x) \rightarrow \text{FAR 1}$
	81	2043,A ,40	$1024 \rightarrow \text{AR h. adr. (perm. konst.)}$
	82	2003,A ,01	$F''(x) = F_1'(x) + 1024 \rightarrow \text{AR}$
	83	2003,A ,08	$F''(x) \rightarrow \text{FAR 2}$
	84	0,A ,07	$F(x) \rightarrow \text{AR}$
Udgang I	← 85	<u>1,D ,10</u>	hop ud
77 →	86	2042,A ,24	$F(x) = 0 \rightarrow \text{AR og MR}$
	87	2003,A ,08	$F''(x) = 0 \rightarrow \text{FAR 2 adr.}$
	88	2000,A ,08	$F'(x) = 0 \rightarrow \text{FAR 1}$
Udgang II	← 89	<u>1,D ,10</u>	hop ud
	90	B 02700	39
	91	0,A ,00	arb.cel.
	92	0,A ,00	} arb.cel.
	93	0,A ,00	
	94	0,A ,00	} arb.cel.
	95	0,A ,00	
	96	0,A ,00	} arb.cel.
	97	0,A ,00	
	98	B + 517CC	} $b_1 = \pi^{-1}$
	99	B 1B725	
	100	B E4D66	} b_3
	101	B A1A9A	
	102	B + 10402	} b_5
	103	B 5FE4E	
	104	B - F45C0	} b_7
	105	B 04A1A	
	106	B + 090BA	} b_9
	107	B F6B09	
	108	B - F8B07	} b_{11}
	109	B EE07C	
	110	B + 059DC	} b_{13}
	111	B 80077	
	112	B - FD08F	} b_{15}
	113	B BF662	
	114	B + 1A827	} $\frac{1}{2} \text{ ct}$
	115	B 999FD	
	116	B 20000	$\frac{1}{4}$

$$-\frac{x^3}{3} \rightarrow 530$$

$$x - \frac{x^3}{3} \rightarrow 532$$

$$x - \frac{x^3}{3} + \frac{x^5}{3 \cdot 5} - \frac{x^7}{3 \cdot 5 \cdot 7}$$

538 DIA

5/8