

HP-41C Number Theory Program by Eric Postpischil
PPC Calculator Journal V10 No 4 Page 21 May 1983
This program needs PPC ROM for NP & QR functions

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01 LBL "NT"      ;Number Theory Program
02 GTO IND 06
03 LBL 01        ;Store First Pair - Called by a Program
04 ISG 06
05 LBL A        ;Store First Pair of Inputs
06 STO 04       ;for Congruency Solving
07 X<>Y
08 STO 05
09 X<>Y
10 RTN
11 LBL B        ;Process Pairs of Inputs
12 LBL 02       ;for Congruency Solving
13 STO N
14 X<>Y
15 STO M
16 RCL 05
17 XEQ 06
18 RCL 05
19 LASTX
20 /
21 STO 05
22 RCL N
23 RCL 04
24 -
25 *
26 *
27 RCL 04
28 +
29 RCL M
30 RCL 05
31 *
32 STO 05
33 MOD
34 STO 04
35 RTN
36 GTO 02
37 LBL G        ;Phi Function
38 LBL 07
39 E
40 STO M
41 STO N
42 ST+ X
43 LBL 14
44 XROM 20,14 ;NP - PPC ROM Next Prime
45 1/X
46 X=Y?
47 GTO 07
48 LASTX
49 X<> M
50 LASTX
51 X#Y?
52 DSE X
53 ST* N
54 R^
55 LASTX
56 ST/ Y
57 GTO 14
58 LBL 07
59 RCL N
60 RTN
61 LBL F        ;Multiplicative Inverse
62 LBL 06
63 XEQ 07
64 R^
65 RTN
66 LBL E        ;Greatest Common Divisor
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67 LBL 05
68 XEQ 07
69 LASTX
70 RTN
71 LBL J      ;Least Common Multiple
72 LBL 10
73 STO N
74 X<>Y
75 ST* N
76 XEQ 05
77 ST/ N
78 RCL N
79 RTN
80 LBL D      ;Division Function
81 LBL 04
82 RCL Z
83 STO N
84 RDN
85 XEQ 07
86 R^
87 RCL N
88 LASTX
89 /
90 *
91 RTN
92 LBL I      ;Exponentiation Function
93 LBL 09
94 STO M
95 RDN
96 STO N
97 X<>Y
98 X<0?
99 X=0?
100 GTO 09
101 CHS
102 X<> M
103 XEQ 07
104 R^
105 X<> M
106 RCL N
107 X<>Y
108 LBL 09
109 E
110 STO N
111 LBL 11
112 ST+ X
113 XROM 10,54 ;QR - PPC ROM Quotient Remainder
114 X=0?
115 GTO 11
116 CLX
117 RCL M
118 RCL N
119 *
120 R^
121 MOD
122 STO N
123 LBL 11
124 RCL M
125 X^2
126 R^
127 MOD
128 STO M
129 LASTX
130 R^
131 E
132 X<=Y?
133 GTO 11
134 RCL N
135 RTN
136 LBL H      ;Sigma Function

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137 LBL 08
138 E
139 STO O
140 STO N
141 ST+ X
142 STO M
143 LBL 12
144 XROM 20,14 ;NP - PPC ROM Next Prime
145 1/X
146 X=Y?
147 GTO 08
148 LASTX
149 X<> M
150 ST* O
151 LASTX
152 X=Y?
153 GTO 12
154 X<> O
155 DSE X
156 X<>Y
157 DSE X
158 ST/ Y
159 X<>Y
160 ST* N
161 LBL 12
162 R^
163 LASTX
164 ST/ Y
165 GTO 12
166 LBL 08
167 RCL N
168 RCL O
169 RCL M
170 ST* Y
171 DSE Y
172 DSE X
173 /
174 *
175 RTN
176 LBL C ;Power Residue Determination
177 LBL 03
178 STO M
179 RDN
180 STO N
181 DSE X
182 XEQ 05
183 RCL N
184 DSE X
185 X<>Y
186 /
187 RCL N
188 RCL M
189 XEQ 09
190 2
191 -
192 SIGN
193 CHS
194 RTN
195 LBL 07
196 E
197 .
198 R^
199 R^
200 LBL 13
201 XROM 10,54 ;QR - PPC ROM Quotient Remainder
202 X=0?
203 RTN
204 R^
205 ST* Z
206 R^

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207 R^
208 ST- Y
209 RDN
210 X<>Y
211 LASTX
212 R^
213 GTO 13
214 LBL 00
215 FIX 0
216 CF 29
217 END

0148C000F3004E54AE06029606CF663471357185CF67039176
71917525E0000625764335907624414242244090752542354B
3485B300CF6C081B9175917692730FA50E6078B80076CE7576
799773947674769572BF0008907685CF6B07E000077485CF6A
06E000077685CF6F0B9176719476E000059576907685CF6905
9071917675E0000774907676434285CF6E0A91757591767166
67BA0054CE75E0000774CE759076710A1B91760C9273A2B667
BC00779075907642744B91760C907551744B917576741B46BC
00907685CF6D091B91779176927391750DA50E6078B90076CE
7594777678BD00CE77977371977395727194760D74769572BD
0009907690779075947297729773434285CF68049175759176
9773E0000590769773714390769075E0000912417A5485081B
001A74740EA2B667857494717474937275717674BE00019C00
A91DC0000DE5

328 BYTES

HP-41C Number Theory by Eric Postpischil PPC V10 N4 P21 May 1983

Program Registers Needed: 47

Row 1 (1 - 5)



Row 2 (6 - 15)



Row 3 (16 - 25)



Row 4 (26 - 36)



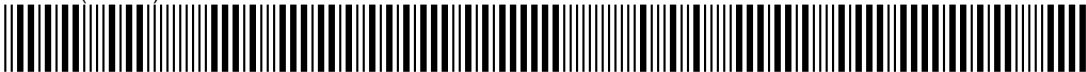
Row 5 (37 - 44)



Row 6 (45 - 53)



Row 7 (54 - 62)



Row 8 (63 - 70)



Row 9 (71 - 77)



Row 10 (78 - 85)



Row 11 (85 - 94)



Row 12 (95 - 103)



Row 13 (103 - 112)



Row 14 (112 - 120)



Row 15 (121 - 130)



Row 16 (131 - 139)



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Row 17 (140 - 147)



Row 18 (148 - 155)



Row 19 (156 - 164)



Row 20 (165 - 171)



Row 21 (172 - 180)



Row 22 (181 - 187)



Row 23 (188 - 196)



Row 24 (197 - 207)



Row 25 (208 - 216)



Row 26 (217)

