(2)

entrée $U = \mathcal{P}_{A_0} \in \mathbb{Z}[x_1 \dots x_n]$

$V = \mathcal{P}_{A_1} \in \mathbb{Z}[x_1 \dots x_n]$

conserve A0/A1

Sort $\mathcal{P}_{A_2} = \text{pgcd}(U,V) \in \mathbb{Z}[x_1 \dots x_n]$

Note $\text{pgcd}(U,0) = U$

```
XGCD : MOVEM.L  A0/A1/A6,-(SP)
x      MOVE.L   (A1),D0        MOVE 4(A1),D1 ⊗
       BNE      KI87           BCLR #15,D1   D1
       CMP      #$4000,4(A1)   CMP #$4001,4(A1)
       BNE      KI85           BEQ KI860
KI84 : BSR      XPSAP
       BRA      KI86

KI85 : EXG      A0,A1
repete MOVE.L   (A1)+,D0
x      BNE      KI88
       CMP      #$4000,(A1)
       BEQ      KI84
       ADDQ     #4,A0

       CLR.L    (A6)+
       BSR      XPGCD
KI86 : MOVEM.L  (SP)+,A0/A1/A2
       RTS

KI87 : EXG      A0,A1
       TST.L    (A1)+
       BNE      KI88
       CMP      #$4000,(A1)    ⊗ MOVE (A1),D1
       BEQ      KI84                 D1
       CMP      #$4001,(A1)    ⊗ BCLR #15,D1
       BEQ      KI860                 D1
```

$\mathcal{P}_{A_1} \neq Cte$ $x = D0$

$\downarrow \mathcal{P}_{A_1} = 0$ recopie $\mathcal{P}_{A_0}$

(ici $\mathcal{P}_{A_0} = Cte \neq 0$)

$\rightarrow \mathcal{P}_{A_1} \neq Cte$ $(x = D0)$ (mais $\mathcal{P}_{A_0} = Cte$)

$\rightarrow \mathcal{P}_{A_1} = 0$ (et $\mathcal{P}_{A_2} = Cte$)

$\downarrow \mathcal{P}_{A_1}$ et $\mathcal{P}_{A_2} = Cte$

```
KI860 : BSR  XPSP1      pnet pgcd = 1
        BRA  KI86
```

ici $\mathcal{P}_{A_0} \neq Cte$ $x = D0$

$\rightarrow \mathcal{P}_{A_1} \neq Cte$, $\mathcal{P}_{A_0} \neq Cte$

$\rightarrow \mathcal{P}_{A_1} = 0$ (et $\mathcal{P}_{A_0} \neq Cte$)

déterminer le littéral $D0 = x$ de P_{A0} et P_{A1} tel que $\min_x(\deg(U,x), \deg(V,x))$ soit atteint

```
KI88 : MOVEM.L (SP),A0/A1
       MOVE   (A0)+,D3
       MOVE   (A1)+,D1
KI882: MOVE   (A0)+,D0      <- TST D1 / BEQ KI883
       MOVE   (A1)+,D2      <- TST D3 / BEQ KI886
       CMP    D0,D2
X      BNE    KI885
       SUBQ   #1,D1
       SUBQ   #1,D3
       BNE    KI882
       TST    D1
X      BNE    KI882
```

si les littéraux de U et V diffèrent prendre le 1er différent

X

```
KI88 : MOVE.L (SP),A0
X      BSR    XDEGMN
       MOVE.L 4(SP),A0
       MOVEM  D2/D6,-(SP)
       BSR    XDEGMN
       MOVEM  (SP)+,D0/D5
       CMP    D6,D5
X      BCS    KI883
       BNE    KI886
       CMP    D0,D2
X KI885: BCC  KI883
KI886: MOVE   D2,D0
```

car les littéraux sont identiques

met $x = D2$, $D6 = \deg_{\min}$

→ fin

→ fin

89

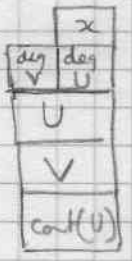
KI88: MOVE.L (SP),A0 — U ⊗ ici D0=x, A0 et A1 détruits

BSR XCONT — $P_{A_2} = cont(U)$, $D_6 = deg_x(U)$

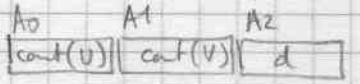
MOVE D5,D6

MOVE.L 4(SP),A0 — V

BSR XCONT — $P_{A_2} = cont(V)$, $D_5 = deg_x(V)$



MOVEM D0/D5/D6,-(SP) — x, deg(V), deg(U)



MOVE.L A2,A1 — $P_{A_1} = cont(V)$

MOVE.L 14(SP),A0 — $P_{A_0} = cont(U)$

BSR XGCD — $P_{A_2} = d = pgcd(cont(U), cont(V))$

MOVEM (SP)+,D0/D5/D6

TST D5

× BEQ KI90

TST D6

× BNE KI92

KI90: BSR XLB76 — cas deg(U) ou deg(V) = 0 met d

BRA KI86

KI92: MOVEM.L (SP),D3/D4 — U V — $U' = U$, $V' = V$

SUB ~~CMP~~ D5,D6 — deg(V) deg(U)

× BCC KI93

EXG ~~D3,D4~~ — ~~D6 ≤ D5~~ $U' \leftrightarrow V'$

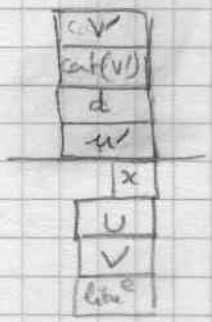
EXG A0,A1 — $cont(U') \leq cont(V')$

× ~~NEG D6~~ ⊠

KI93 : MOVE D0, -(SP)

~~MOVE D6, -(SP) ⊗~~

MOVEM.L D4/A1/A2/A6, -(SP)
v' cst(v') d u'



MOVE.L A0, A1 $\quad \mathcal{P}_{A_1} = cst(v')$

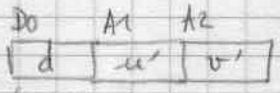
MOVE.L D3, A0 $\quad \mathcal{P}_{A_0} = v'$

BSR XCTDIV $\quad \mathcal{P}_{A_2} = u' = \frac{v'}{cst(v')}$

MOVEM.L (SP)+, A0/A1
v' cst(v')

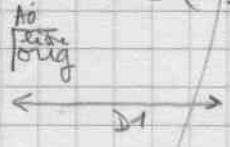
BSR XCTDIV $\quad \mathcal{P}_{A_2} = v'$

MOVEM.L (SP)+, D0/A1
d u'



~~MOVE (SP)+, D6~~ ⊗

MOVE.L 10(SP), A0



MOVE.L D0, D1

SUB.L A0, D1

SUB.L D1, A1 nouveau u

SUB.L D1, A2 nouveau v

MOVEM.L A1/A2, -(SP)

MOVE.L D0, A2

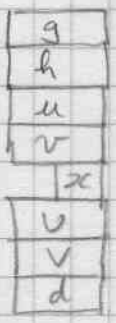
⊗ KI930 : BSR XLB76

BSR XPSP1 g

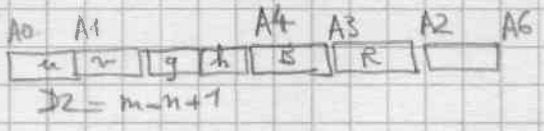
MOVEM.L A2/A6, -(SP)

BSR XPSP1 h

} revient ⊗

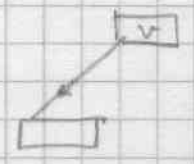


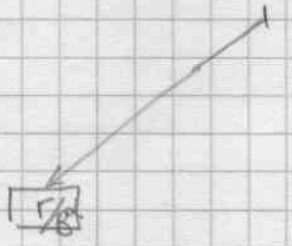
(2)




```
        BSR   KJ17
        CMP   #3,D2
        BCS   KI98          → normal
        TST.L (A4)          ← { BNE  KI932
x       BEQ   KI98          → si B = ~~1~~ : normal   MOVE 4(A4),D3
                                                      BCLR #15,D3
                                                      CMP  #$4001,D3
KI932:  MOVE.L A2,A6
        MOVE.L A4,A1        P_A1 = B
        MOVE.L A3,A2                                  { TST.L (A4)
KI934 : MOVE.L A2,A0        P_A0 = R                  { BEQ  KI936
        BSR   XCTDIV1       R divisible par B ?
```


```
        BEQ   KI934
        MOVE.L A0,A3
KI936 : MOVE.L A6,A1        ⊗
        MOVE.L (SP)+,A6
        ADDQ  #4,SP
        MOVE.L (SP),A0/A2
        BSR   XLB76
        MOVE.L A0,4(SP)
        MOVE.L A1,A6
        MOVE.L A3,A2
        BSR   XLB76
        MOVE.L 4(SP),A0     r
        MOVE  8(SP),D0      x
        BSR   XCONT         P_A2 = cont(r)
        MOVE.L A2,A1
        BSR   XCTDIV
        MOVE.L 4(SP),A0
        BRA   KI930
```





BSR XNORPE $P_{A_2} = \frac{r}{R}$ (coef entier)

~~MOVE.L 4(SP),A0~~

(2)

KI94 : BSR KJ17 ⊗

KI98 : MOVE.L A2, A6

MOVE.L A3, A0 A2 $r = P_{A_2}$

~~MOVE D2, D6~~ ⊗ $D6 = \delta + 1$

BSR XDEG

TST D5

BEQ KI96 → $\deg(r) = 0$

calcule $v' = r/gh^\delta$

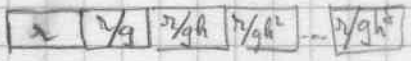
MOVE.L (SP), A1 g

MOVEM.L D2 D6/A4, -(SP)

$\delta+1$ B

← MOVE.L ~~A0~~, A2 ⊗

BRA KJ12



KJ10 : MOVE D2 D6, (SP)

MOVE.L A2, A0

BSR XCTDIV

MOVE.L 12(SP), A1 h

MOVE (SP), D6 D2

KJ12 : DBRA D6 D2, KJ10

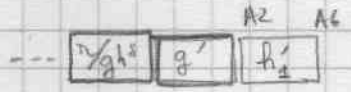
$P_{A_2} = \frac{r}{gh^\delta}$

MOVEM.L (SP)+, D6/A0/A1/A3

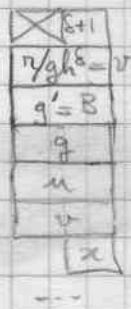
$\delta+1$ B g h

MOVE.L A1, -(SP)

MOVEM.L D6/A2/A6, -(SP)



BSR XPSAP



MOVE.L A3, A0

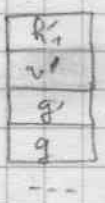
BSR XPSAP $P_{A_2} = h$

MOVE.L (SP)+, D6

MOVE.L A2, -(SP)

SUBQ #1, D6

BEQ KJ16 $\xrightarrow{\delta=0}$



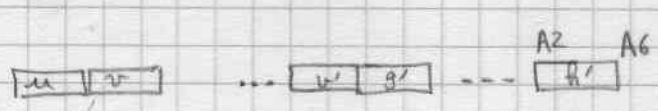
(2)

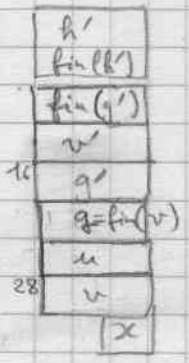
```
        SUBQ #1,D6          D6 = δ-1
        BNE  KJ14
        cas δ=1
        MOVE.L  A2,A6
        MOVE.L  8(SP),A0    g'
        BSR  XPSAP          h'1 = g'
X       BRA  KJ16
        cas δ>1
KJ14:   MOVE  D6,-(SP)
        MOVE.L  A2,A0
        MOVE  D6,D1
        BSR  XEXPP          b = h^(δ-1)
        MOVE  (SP)+,D1
        MOVE.L  8(SP),A0    g'
        MOVE.L  A2,-(SP)
        ADDQ #1,D1
        BSR  XEXPP          g'^δ
        MOVE.L  A2,A0
        MOVE.L  (SP)+,A1    h^(δ-1)
        BSR  XCTDIV         g'^δ / h^(δ-1)
```

A2 → $h^{\delta-1}$

$h^{\delta-1}$
$h \leftarrow g'$
g'

(2)





KJ16 : MOVEM.L A2/A6, -(SP)

MOVEM.L 20(SP), D0/A0/A2 ⊗
fin(v) u v

MOVE.L D0, A6

BSR XLB76

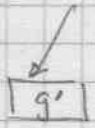
MOVE.L A0, 28(SP) nouveau v

MOVEM.L 12(SP), A2/A6
v' g'

BSR XLB76

MOVE.L A0, 16(SP) nouveau g'

MOVE.L 8(SP), A6



BSR XLB76

MOVEM.L (SP)+, A2/A6
h' fin

ADDQ #8, SP

MOVE.L A0, 4(SP) nouveau h'

BSR XLB76

BRA KJ94

(2) ! ~~Reste~~ divise et teste le reste sortie si reste = 0 ou de degré 1

(SP) utilise la pile

KJ17: MOVEM.L 12(SP), A0/A1 (u / v)

MOVE 20(SP), D0 (x)

BSR XPSDIV

TST.L (A3)

BNE KJ178

CMP #$4000, 4(A3)

BNE KJ176

MOVEM.L (SP)+, D1/D2/D3/D4/A0 (D1 retour, D2 g, D3 h, D4 u, A0 v)

MOVE.L D2, A6

BSR XCONT

MOVE.L A2, A1

BSR XCTDIV

MOVE.L A2, A1

ADDQ #2, SP

MOVE.L 8(SP), A0

BSR XMULP

BSR XLB76

BRA KI86

KJ176: MOVEM.L (SP)+, D0/D1/D2/A6 (D0 retour, D1 g, D2 h, A6 fin de d (u))

ADDQ #6, SP

BRA KI86

KJ178: MOVEM.L D2/A0/A2/A3, -(SP)

MOVE.L A3, A0

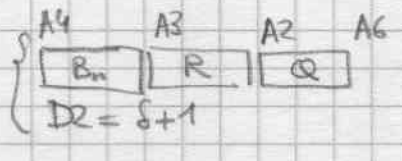
BSR XDEG

MOVEM.L (SP)+, D2/A0/A2/A3

TST D5

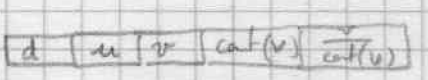
BEQ KJ176

RTS



→ reste de degré 1

↓ reste de degré 0



$P_{A_2} = cont(v)$

$P_{A_2} = \frac{v}{cont(v)}$

d

$d \frac{v}{cont(v)}$

reste de degré 1