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> restart;
with(LinearAlgebra):
Left := proc(m::posint, n::posint)

local M0:= <<1>>, M1:= <<0>>, M2:= <<0>>, i, B;
global T, G;
local m0:= <<0>>, m1:= <<1>>, m2:= <<0>>, A;

for i to m do
local Z:= Matrix(2^(i-1)$2, 0);
(M2, M1, M0):= (<y*M0, Z; Z, Z>, <M2, x*M0; M0, Z>, <M1+M2, x*M0;
M0, Z>)
od;

for i to m do
local z:= Matrix(2^(i-1)$2, 0);
(m2, m1, m0):= (<y*m0, z; z, z>, <m2, x*m0; m0, z>, <m1+m2, x*m0;
m0, z>)
od;

A:= (M0+m0):
B:= (A)^n:
T:= simplify(subs({x=y,y=x},B[1, 1]))
end proc;

F := proc(P)
local temp, mindeg;
temp := select(term->member (degree(term,[x])-degree(term,[y]),
[0,-1]), [op(p)]); mindeg := min(map(degree,temp,[x,y])); select
(term->degree(term,[x,y])=mindeg, temp);
end proc;
Left := proc(m::posint, n::posint)
local M0, M1, M2, i, B, m0, m1, m2, A, Z, z;
global T, G;
M0 := < < 1 > >;
M1 := < < 0 > >;
M2 := < < 0 > >;
m0 := < < 0 > >;
m1 := < < 1 > >;
m2 := < < 0 > >;
for i to m do
Z := Matrix(2^(i-1)$2, 0);
M2, M1, M0 := < < y*M0|Z >, < Z|Z >, < < M2|x*M0 >, < M0
|Z > >, < < M1 + M2|x*M0 >, < M0|Z > >
end do;
for i to m do
z := Matrix(2^(i-1)$2, 0);
m2, m1, m0 := < < y*m0|z >, < z|z >, < < m2|x*m0 >, < m0|z > >,
< < m1 + m2|x*m0 >, < m0|z > >
end do;

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A := M0 + m0;
B := A^n;
T := simplify(subs( {x=y, y=x}, B[1, 1] ))

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end proc

F := proc(P)

local temp, mindeg;

temp := select(term → member(degree(term, [x]) - degree(term, [y]), [0, -1]),
[op(p)]);

mindeg := min(map(degree, temp, [x, y]));

select(term → degree(term, [x, y]) = mindeg, temp)

end proc

(1)

G := select(T → abs(degree(T, x) - degree(T, y)) < 2, expand(Left(3, 6)));
F(G, [x, y]);

$$G := 20x^4y^5 + 280x^4y^4 + 676x^4y^3 + 288x^3y^4 + 136x^3y^3 + 222x^2y^3 + 24x^2y^2$$

[p]

(2)

G := select(T → abs(degree(T, x) - degree(T, y)) < 2, expand(Left(4, 5)));
F(G, [x, y]);

$$G := 287x^5y^4 + 432x^4y^5 + 1158y^4x^4 + 708y^3x^4 + 1202x^3y^4 + 296x^3y^3 + 12x^3y^2$$

[p]

(3)

(3)

G := select(T → abs(degree(T, x) - degree(T, y)) < 2, expand(Left(3, 10)));
F(G, [x, y]);

$$G := 144x^8y^7 + 2368x^7y^7 + 19648x^7y^6 + 56584x^6y^7 + 144512x^6y^6 + 159408x^6y^5$$

$$+ 103744x^5y^6 + 44000x^5y^5 + 5952x^5y^4 + 48120x^4y^5 + 8400x^4y^4 + 560x^4y^3$$

[p]

(4)