

```

> MY_DIVIDE := proc(A, B)
    local R;
    local Q;
    local x;
    local M;
    local flag;
    local q;
    R := A;
    Q := 0;
    x := indets(A) union indets(B);
    if x = {} then
        q := iquo(A, B, 'r');
        if r = 0 then
            return q;
        else
            return FAIL;
        fi;
    fi;

    while R <> 0 and degree(R, x[1]) >= degree(B, x[1]) do
        q := MY_DIVIDE(lcoeff(R, x[1]), lcoeff(B, x[1]));
        if q = FAIL then return q; fi;
        M := q * (x[1]^(degree(R, x[1]) - degree(B, x[1])));
        R := collect(expand(R - B * M), x[1]);
        Q := Q + M;
    od;

    if R = 0 then
        return collect(expand(Q), x[1]);
    else
        return FAIL;
    fi;
end;

```

MY_DIVIDE := proc(A, B)

(1)

local R, Q, x, M, flag, q;

R := A;

Q := 0;

x := indets(A) union indets(B);

if x = { } then q := iquo(A, B, 'r'); if r=0 then return q else return FAIL end if
end if;

while R <> 0 and degree(B, x[1]) <= degree(R, x[1]) do

q := MY_DIVIDE(lcoeff(R, x[1]), lcoeff(B, x[1]));

if q = FAIL then return q end if;

*M := q * x[1]^(degree(R, x[1]) - degree(B, x[1]));*

*R := collect(expand(R - B * M), x[1]);*

Q := Q + M

end do;

if R=0 then return collect(expand(Q), x[1]) else return FAIL end if

end proc

```

> a := (6*y^2-5*y*z+z^2)*x^2+(7*y^2*z-3*y*z^2)*x+2*y^2*z^2;

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b := (2*y-z)*x+y*z;
```

$$a := (6y^2 - 5yz + z^2)x^2 + (7y^2z - 3yz^2)x + 2y^2z^2$$

$$b := (2y - z)x + yz$$

(2)

```
> divide(a, b, 'q');
collect(q, x)
```

$$\text{true}$$

$$(3y - z)x + 2yz$$

(3)

```
> divide(a+x, b, 'q');
```

$$\text{false}$$

$$(3y - z)x + 2yz$$

(4)

```
> divide(a+2, b, 'q');
```

$$\text{false}$$

$$(3y - z)x + 2yz$$

(5)

```
> divide(expand(a*b), b, 'q');
collect(q, x)
```

$$\text{true}$$

$$(6y^2 - 5yz + z^2)x^2 + (7y^2z - 3yz^2)x + 2y^2z^2$$

(6)

```
> MY_DIVIDE(a, b);
```

$$(3y - z)x + 2yz$$

(7)

$$0$$

(8)

$$\emptyset$$

(9)

$$\emptyset = \emptyset$$

(10)

```
> MY_DIVIDE(a+x, b);
```

FAIL

(11)

```
> MY_DIVIDE(a+2, b);
```

FAIL

(12)

```
> MY_DIVIDE(expand(a*b), b);
```

$$(6y^2 - 5yz + z^2)x^2 + (7y^2z - 3yz^2)x + 2y^2z^2$$

(13)