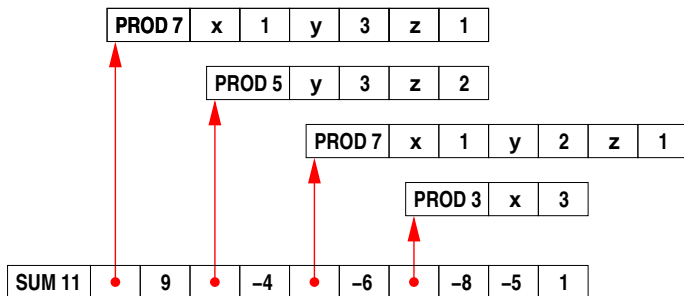


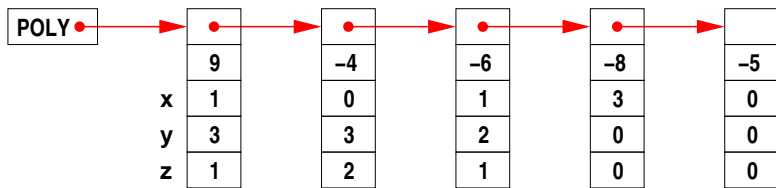
# Maple's sum of products representation

$$9xy^3z - 4y^3z^2 - 6xy^2z - 8x^3 - 5$$



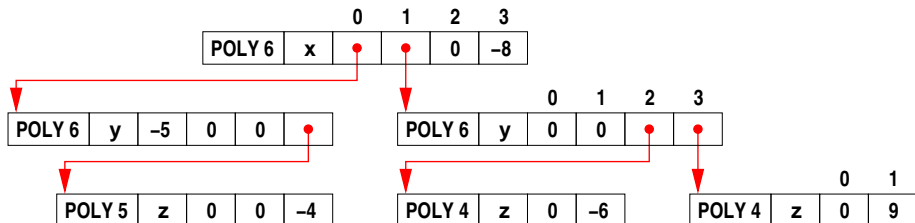
# Singular's linked lists representation

$$9xy^3z - 4y^3z^2 - 6xy^2z - 8x^3 - 5$$



# Pari's recursive dense representation

$$(-5 - 4z^2y^3) + (-6zy^2 + 9zy^3)x - 8x^3$$



# Maple's packed monomial arrays

$$9xy^3z - 4y^3z^2 - 6xy^2z - 8x^3 - 5$$

SEQ 4	x	y	z
-------	---	---	---



POLY 12	•	5131	9	5032	-4	4121	-6	3300	-8	0000	-5
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Monomials are encoded in 64 bit integers.

# Maple's packed monomial arrays cont.

```
> f := 9*x*y^3*z-4*y^3*z^2-6*x*y^2*z-8*x^3-5;
```

$$f := 9 x^3 y^3 z - 4 y^3 z^2 - 6 x^2 y^2 z - 8 x^3 - 5$$

```
> dismantle(f);
```

```
POLY(12)
```

```
EXPSEQ(4)
```

```
NAME(4): x
```

```
NAME(4): y
```

```
NAME(4): z
```

```
DEGREES(HW): ^5 ^1 ^3 ^1
```

```
INTPOS(2): 9
```

```
DEGREES(HW): ^5 ^0 ^3 ^2
```

```
INTNEG(2): -4
```

```
DEGREES(HW): ^4 ^1 ^2 ^1
```

```
INTNEG(2): -6
```

```
DEGREES(HW): ^3 ^3 ^0 ^0
```

```
INTNEG(2): -8
```

```
DEGREES(HW): ^0 ^0 ^0 ^0
```

```
INTNEG(2): -5
```