```
Welcome to Canopy's interactive data-analysis environment!
 with pylab-backend set to: qt
Type '?' for more information.

In [1]: %run "D:\KANSAS\PhD Program\RESEARCH\Pompei\conjecture.py"
IPython console for SymPy 0.7.6.1 (Python 2.7.9-32-bit) (ground types: python)

Enter an integer for M: 3

Enter an integer for n: 2
M = 3, n = 2:

Original equation:
<IPython.core.display.Math at 0xba55d68>
('Time elapsed:', 0.5780000686645508, 'seconds')

Simplified left-hand-side, where f_{-j}=conj(f_j):
```

$$4f_0^3\overline{f_2}+12f_0^2f_1\overline{f_3}+6f_0^2\overline{f_1}^2+24f_0f_1\overline{f_1f_2}+24f_0f_2\overline{f_1f_3}+12f_0f_2\overline{f_2}^2+24f_0f_3\overline{f_2f_3}+12f_1^2\overline{f_1f_3}+6$$

```
('Time elapsed:', 1.937000036239624, 'seconds')

All possible solutions:
```

$$\{f_1 : 0, \quad f_2 : 0\}$$

$$\{f_1 : 0, \quad f_2 : 0, \quad f_3 : 0\}$$

```
Generating report.
('Time elapsed:', 4.430999994277954, 'seconds')

In [2]: %run "D:\KANSAS\PhD Program\RESEARCH\Pompei\conjecture.py"
IPython console for SymPy 0.7.6.1 (Python 2.7.9-32-bit) (ground types: python)

Enter an integer for M: 4

Enter an integer for n: 2
M = 4, n = 2:

Original equation:
<IPython.core.display.Math at 0xa0e2518>
('Time elapsed:', 17.369999885559082, 'seconds')

Simplified left-hand-side, where f_{-j}=conj(f_j):
```

$$4f_0^3\overline{f_2}+12f_0^2f_1\overline{f_3}+12f_0^2f_2\overline{f_4}+6f_0^2\overline{f_1}^2+12f_0f_1^2\overline{f_4}+24f_0f_1\overline{f_1f_2}+24f_0f_2\overline{f_1f_3}+12f_0f_2\overline{f_2}^2+24$$

```
('Time elapsed:', 18.122999906539917, 'seconds')

All possible solutions:
```

$$\{f_1 : 0, \quad f_2 : 0, \quad f_3 : 0\}$$

$$\{f_1 : 0, \quad f_2 : 0, \quad f_3 : 0\}$$

$$\{f_1 : 0, \quad f_2 : 0, \quad f_4 : 0\}$$

$$\{f_1 : 0, \quad f_2 : 0, \quad f_3 : 0, \quad f_4 : 0\}$$

```
Generating report.
```

('Time elapsed:', 21.842000007629395, 'seconds')

In [2]:

In [3]: %run "D:\KANSAS\PhD Program\RESEARCH\Pompei\conjecture.py"
IPython console for SymPy 0.7.6.1 (Python 2.7.9-32-bit) (ground types: python)

Enter an integer for M: 1

Enter an integer for n: 2
M = 1, n = 2:

Original equation:
<IPython.core.display.Math at 0xbe2b278>
('Time elapsed:', 0.0009999275207519531, 'seconds')

Simplified left-hand-side, where f_{-j}=conj(f_j):

$$6f_0^2\overline{f_1}^2 + 4f_1\overline{f_1}^3$$
('Time elapsed:', 0.4179999828338623, 'seconds')

All possible solutions:

$$0$$

$$-\frac{\sqrt{6}}{2}\sqrt{-f_0^2}$$

$$\frac{\sqrt{6}}{2}\sqrt{-f_0^2}$$

Generating report.
('Time elapsed:', 2.8559999465942383, 'seconds')

In [3]:

In [4]: %run "D:\KANSAS\PhD Program\RESEARCH\Pompei\conjecture.py"
IPython console for SymPy 0.7.6.1 (Python 2.7.9-32-bit) (ground types: python)

Enter an integer for M: 5

Enter an integer for n: 2
M = 5, n = 2:

Original equation:
<IPython.core.display.Math at 0xbe29b00>
('Time elapsed:', 425.7779998779297, 'seconds')

Simplified left-hand-side, where f_{-j}=conj(f_j):

$$4f_0^3\overline{f_2}+12f_0^2f_1\overline{f_3}+12f_0^2f_2\overline{f_4}+12f_0^2f_3\overline{f_5}+6f_0^2\overline{f_1}^2+12f_0f_1^2\overline{f_4}+24f_0f_1f_2\overline{f_5}+24f_0f_1\overline{f_1f_2}+24f$$
('Time elapsed:', 426.9489998817444, 'seconds')

All possible solutions:

$$\{f_1 : 0, \quad f_2 : 0, \quad f_3 : 0, \quad f_4 : 0\}$$

Generating report.

```
('Time elapsed:', 486.13699984550476, 'seconds')
```

In [5]: