

Pensieve header: Det on polys has a bottleneck in dimension 11. See also <http://mathematica.stackexchange.com/questions/109631/issue-in-det-when-computing-determinants-of-polynomials>.

```
n = 12;
M = Table[RandomInteger[10] t + RandomInteger[10], {i, 1, n}, {j, 1, n}]
{{6 + 3 t, 5 t, 2 + 3 t, 1, 2 + 9 t, 5 + 10 t, 10 + 9 t, 6 + 7 t, 8 + 8 t, 9 + 7 t, 7 + 8 t, 7 + 4 t},
 {9 + 8 t, 1 + 10 t, 10 + 6 t, 5 + 8 t, 8 + 3 t, 3 + 6 t, 7 + 9 t, 9 + 10 t, 3 + 5 t, 6 + t, 3 + 2 t, 10 + 10 t},
 {8 + 4 t, 6 + 2 t, 6 + 7 t, 4 + 2 t, 7 + 3 t, 1 + 2 t, 9 + 2 t, 7 + 7 t, 1 + 7 t, 9, 7 + t, 3 + 7 t},
 {4 + 5 t, 7 t, 2 + 5 t, 4 + 9 t, 1 + 6 t, 5 + 6 t, 7 + 7 t, 5 t, 10 + 6 t, 9 + 6 t, 5 + 10 t, 9},
 {10 + 8 t, 10 t, 3 + t, 6 + 8 t, 3 + t, 2 t, 3 + 10 t, 10 + t, 6 + 9 t, 6 + 8 t, 7 + 6 t, 1},
 {3 + 6 t, 8 t, 10 t, 4 + 5 t, 3 + 9 t, 7 + 8 t, 8 + 8 t, 1 + t, 5, 4 + 10 t, 3 + 3 t, 8 + 9 t},
 {8 t, 9 t, 9 + 3 t, 4, 1, 9 + 2 t, 4 + 3 t, 10 + 10 t, 3, 4 + 4 t, 4 + 10 t, 7 + t},
 {5 + 3 t, 10 + 5 t, 4 + 4 t, 1 + 5 t, 2 + 3 t, 1 + t, 3 + 9 t, 2 + 4 t, 8 + 4 t, 9 + 4 t, 7 t, 8 + 6 t},
 {8 + 5 t, 5 + 5 t, 2 + 6 t, 3 t, 4 + 8 t, 6 + 6 t, 1 + t, 4 + 9 t, 8 + 6 t, 4 + 3 t, 1 + 8 t, 8 + 8 t},
 {9 + 5 t, 7 + 4 t, 4 + 6 t, 10 + 5 t, 0, 3 + 3 t, 6 + 2 t, 7 + 8 t, 6 t, 6 + 9 t, 9 + 2 t, 9},
 {8 + 10 t, 2 + 7 t, 3 + 2 t, 7 + 4 t, 5 + 5 t, 4 + 4 t, 5, 8 + 6 t, 3 + 3 t, 3 + 8 t, 3 + 9 t, 6 + 7 t},
 {7, 9 + 2 t, 7 + 6 t, 9 + 8 t, 7 + 3 t, 9, 5 + 4 t, 1 + 10 t, 9 + 8 t, 3 + 9 t, 6 t, 1 + 3 t}}
```

Timing[Det[M]]

```
{0.03125,
 -9505219800 + 157622192674 t + 27258788212 t2 + 273572132162 t3 + 1097765358262 t4 -
 680101382049 t5 - 3704357793997 t6 - 5037088690357 t7 - 3458699937271 t8 -
 1923824674527 t9 - 1091439759714 t10 - 328058204513 t11 - 48308758407 t12}}
```

Timing[Table[

```
  Det[Delete[j] /@Delete[i]@M],
  {i, n}, {j, n}
]] // Short
```

```
{19.1563, {{<<1>>, <<1>>, <<1>>, <<6>>,
 <<1>>, 4811565488 + <<13>> + 2896248270 t11, <<1>>}, <<11>>}}
```

Table[Echo@{n → First@Timing@Table[Det[

```
  Table[RandomInteger[10] t + RandomInteger[10], {i, 1, n}, {j, 1, n}], {100}]],
{n,
 20}];
```

- " {1 → 0.}
- " {2 → 0.03125}
- " {3 → 0.046875}
- " {4 → 0.09375}
- " {5 → 0.140625}
- " {6 → 0.265625}
- " {7 → 0.515625}
- " {8 → 1.3125}
- " {9 → 3.09375}
- " {10 → 8.625}
- " {11 → 21.4063}
- " {12 → 2.95313}
- " {13 → 3.92188}
- " {14 → 5.07813}
- " {15 → 6.6875}
- " {16 → 8.5625}
- " {17 → 10.9375}
- " {18 → 13.2188}
- " {19 → 17.2656}
- " {20 → 21.5625}