MATH 801 Computer Algebra

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Tuesdays/Thursdays 2:30-4:20pm, Spring 2023.

This document was created in Maple!!

How do computer algebra systems like Maple do algebra and calculus?
Here are two of the algorithms we will learn in this course.

1: Factoring polynomials with integer coefficients

```
+ *   - *   -32*   +12*   +30*   - *  3+11*  2-10* +2
```

$$:= {}^{9} + 7\ {}^{8} - 5\ {}^{7} - 32\ {}^{6} + 12\ {}^{5} + 30\ {}^{4} - 7\ {}^{3} + 11\ {}^{2} - 10\ + 2$$

```
( )
```

$$\left({}^{3} - 3\ + 1\right) \left({}^{4} + 7\ {}^{3} + 2\ - 1\right) \left({}^{2} - 2\right)$$

2: An algorithm for elementary function integration

```
( )*(  ( )*  +   2 -   - 1)/((  +   ( )) 2* )
```

$$:= \mathrm{e}\ \ln$$