(1) -> Z==>Integer; Q==>Fraction Z;

Line analysis:

- "Integer" recognized as \bb{Z}
- ==> recognized as macro alias
- ....

Output: $Z \equiv \mathbb{Z}, Q \equiv \mathbb{Q}$

(2) -> f(q:Q):Q == truncate(abs(q*cos(q::Float))+1)*(q/2+1)

Line Analysis:

- f(q:Q):Q == recognized as function lead in
- Recognize algebraic expression
- Parse
- Convert to latex

Output:

$q \in \mathbb{Q}, f(q) \in \mathbb{Q}$

Definition 1. $f\left(q\right) == \lfloor(|(q \cdot \cos\left(q\right) + 1)| \cdot \left(\frac{q}{2} + 1\right))$

(3) -> s: Stream Q := stream(f, 0)

Definition 2. Line analyis:

- Recognize assigment "s:"
- Recognize data type Q
- Recognize stream as "sequence"

Output: Here we have a choice of how to explain sequence. I would do it:

s is the sequence of $f(0...)$ leading terms are

$\left[0, 1, \frac{3}{2}, ...\right]$

or

s is the sequence of

$\lfloor(|(q \cdot \cos\left(q\right) + 1)| \cdot \left(\frac{q}{2} + 1\right)$

leading terms are $\left[0, 1, \frac{3}{2}, ...\right]$

(4) p:=series(s)$UnivariateFormalPowerSeries(Q)

Line analysis:

- Recognize assignment of "p"
- Recognize "series" means $\sum$
- Recognize "series(s)" and if s is defined *at this level* expand it to notice $f()$

Output:

p is a series over

$f()$: $\sum\limits_{k} f(k) \frac{x^k}{k!}$

(again a choice about displaying leading terms)

Leading terms are

$x + \frac{3}{2}x^2$

And so on ....