

All examples in this test should be successfully parsed by LaTeXML's grammar, and are meant as regression tests.

## 1 sanity check

1.  $1 + 1 = 2$

## 2 Factor

### 2.0.1 Empty Balanced

1.  $()$
2.  $[]$
3.  $\{\}$
4.  $\langle \rangle$
5.  $\llbracket \rrbracket$
6.  $\sqcup$

### 2.0.2 Single Factor production and Monomials

1.  $\times x$
2.  $|x$
3.  $\sin$
4.  $\arcsin$
5.  $\neg$
6.  $\frac{1}{2}x$
7.  $_a$
8.  $12^3$
9.  $\int$
10.  $\int x$
11.  $\int x \, dx$
12.  $\sum$
13.  $\sum x$
14.  $\{x \mid x > 0\}$

15.  $||x||$
16.  $|a|$
17.  $\langle\phi|$
18.  $|\psi\rangle$
19.  $\langle\phi|\psi\rangle$
20.  $xyz$
21.  $\sqrt{x}\sqrt{y}$
22.  $()\{\}\{()\}$
23.  $2|ab|$
24.  $||x||a||y||$

### 2.0.3 Arrays

1. standalone cases

$$\begin{Bmatrix} cca & b \\ c & d \end{Bmatrix}$$

2. standalone array

$$\begin{array}{cc} a & b \\ c & d \end{array}$$

3. lbrace array

$$\left\{ \begin{array}{cc} a & b \\ c & d \end{array} \right.$$

4. rbrace array

$$\begin{array}{cc} a & b \\ c & d \end{array} \right\}$$

## 3 Advanced Scripted

1.  $\text{Na}^+$
2.  $\psi''$
3.  $\int_0^\infty x^2 dx$
4.  $\int_\infty^{(0+)} t \, dt$
5.  $\int_\infty^{(1+,0+,1,0)} t \, dt$
6.  $\sum_{i=0}^{50} x^i$

7.

$$\sum_{\substack{0 \leq i \leq m \\ 0 < j < n}} P(i, j)$$

8.

$$\sum_{i=1}^p \sum_{j=1}^q \sum_{k=1}^r a_{ij} b_{jk} c_{ki}$$

## 4 Advanced Fenced

1.  $\langle a, b \rangle$

2.  $\langle ab \rangle$

3.  $\langle a \rangle$

## 5 Polynomial and multi-relations

1.  $ab + cd - ef + gh$

2.  $|A\rangle = |B\rangle + |C\rangle$

3.  $1 \leq l < j \leq n$

4.  $1 < x < 10, 2 < y < 20, 3 < z < 30$

5.  $a, b \propto \alpha + \frac{1}{\alpha}$

## 6 Modifier Expressions

1.  $> 0$

2.  $(> 0)$

3.  $x(> 0)$

4.  $h(\in C)$

5.  $x : \text{Integer}$

6.  $f : \text{Integer} \Rightarrow \text{Real}$

## 7 Edge/Artefact Cases

1.

## 8 Token Expressions

These are examples using the currently employed terminals in MathGrammar, to enumerate expressions that should remain grammatical if the grammar is modified.

1.  $()$

2.  $x < x = x < x$

3.  $\frac{1}{2} + \frac{1}{2} < \begin{matrix} a & b \\ c & d \end{matrix}$

4.  $\arcsin \pi + \neg x = \left\{ \begin{matrix} a & b \\ c & d \end{matrix} \right.$