Chapter 1

Math!

1.1 The basics

This is math mode: $x = 2$. This is also math mode $x = 3$. Display mode is blow

$$x = 2$$

or

$$x = 3$$

Fraction: $\frac{1}{2}$.

Super and subscripts: $e^{superscript}_{subscript}$

1.2 Different environments

$$A = 2$$
$$= 3x \tag{1.1}$$

For longer equations

$$p(x) = 3x^6 + 14x^5y + 590x^4y^2 + 19x^3y^3$$
$$- 12x^2y^4 - 12xy^5 + 2y^6 - a^3b^3$$

To align equations

$$2x - 5y = 8$$
$$3x + 9y = -12$$

If you just want a few centered equations

$$2x - 5y = 8$$
$$3x^2 + 9y = 3a + c$$

1.3   keywords

All trig functions

$$\max, \min, \ker, \exp, \deg, \gcd, \lg, \ln, \Pr, \sup, \det, \hom, \lim, \log, \arg$$

This is now $OOGLABOOGLA_2 = 2$

$$a\ BOB\ b = 3$$

$$a\ ISSMALLERTHAN\ b$$

1.4   large operators

$$\int_1^n$$

$$\Big|_0^1$$

$$\sum_{i=1}^{\infty}$$

$$\prod_{i=1}^{n}$$

$$\bigcup_{i=1}^n$$

2

$$\bigcap_{i=1}^{n}$$

$$\oint_{1}^{n}$$

$$\coprod_{i=1}^{n}$$

1.5 matrices

inline matrix $\begin{smallmatrix} a & b \\ c & d \end{smallmatrix}$

plain matrix

$$\begin{matrix} a & b & c \\ d & e & f \end{matrix}$$

round matrix

$$\begin{pmatrix} a & b & c \\ d & e & f \end{pmatrix}$$

square matrix (most common)

$$\begin{bmatrix} a & b & c \\ d & e & f \end{bmatrix}$$

curly matrix

$$\begin{Bmatrix} a & b & c \\ d & e & f \end{Bmatrix}$$

piped matrix

$$\begin{vmatrix} a & b & c \\ d & e & f \end{vmatrix}$$

double piped matrix

$$\begin{Vmatrix} a & b & c \\ d & e & f \end{Vmatrix}$$

piecewise expression

$$\begin{cases} x^2 + 2 & x = 3 \\ 3 & x \neq 3 \end{cases}$$

3

1.6   Equivalence relations

$$x \not\lesssim 2$$

$$x \stackrel{a}{=} z$$

1.7   Brackets and stuff

$$(a)[a]\{a\}\langle a\rangle|a|\|a\|$$

Manual sizing

$$\left(\left(\left(\left(\right.\right.\right.\right.$$

For dynamic sizing

$$\left(\int_a^b\right)$$

Asymmetrical dynamically sized bracket

$$\left(\int_a^b\right.$$

1.8   spacing

$$f(x) = x^2 + 3x + 2$$
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$c\ d$

1.9 Display styles

$$\int_a^b xdx = 2$$

$$\int_a^b xdx = 2$$

$$f(x) = 2$$

$$f(x) = 2$$

1.10 fonts

$$3x^2 = 3 + 3$$

$$3x^2 = 3 + 3$$

$$3\mathrm{x}^2 = 3 + 3$$

$$3x^2 = 3 + 3$$

$$\mathbf{3x^2 = 3 + 3}$$

$$3\mathsf{x}^2 = 3 + 3$$

$$3\mathsf{x}^2 = 3 + 3$$

1.11 Proofs and Theorems

Theorem title 1.11.1. *This is a test of what the theorem environment is capable of*

proof title 1.11.1.1. *Testing again!* □

Remark title. test test