The past went that-a-way. When faced with a totally new situation, we tend always to attach ourselves to the objects, to the flavor of the most recent past.

We look at the present through a rear-view mirror. We march backwards into the future. Suburbia lives imaginatively in Bonanza-land.

ROMAN MONUMENTAL CAPITALS (FIRST CENTURY) · ROMAN CURSIVE (SECOND CENTURY) · ROMAN UNCIAL (FIFTH CENTURY) · CAROLINGIAN (NINTH CENTURY) · HUMANIST MINUSCULE (15TH CENTURY) · CHANCERY CURSIVE (16TH CENTURY)

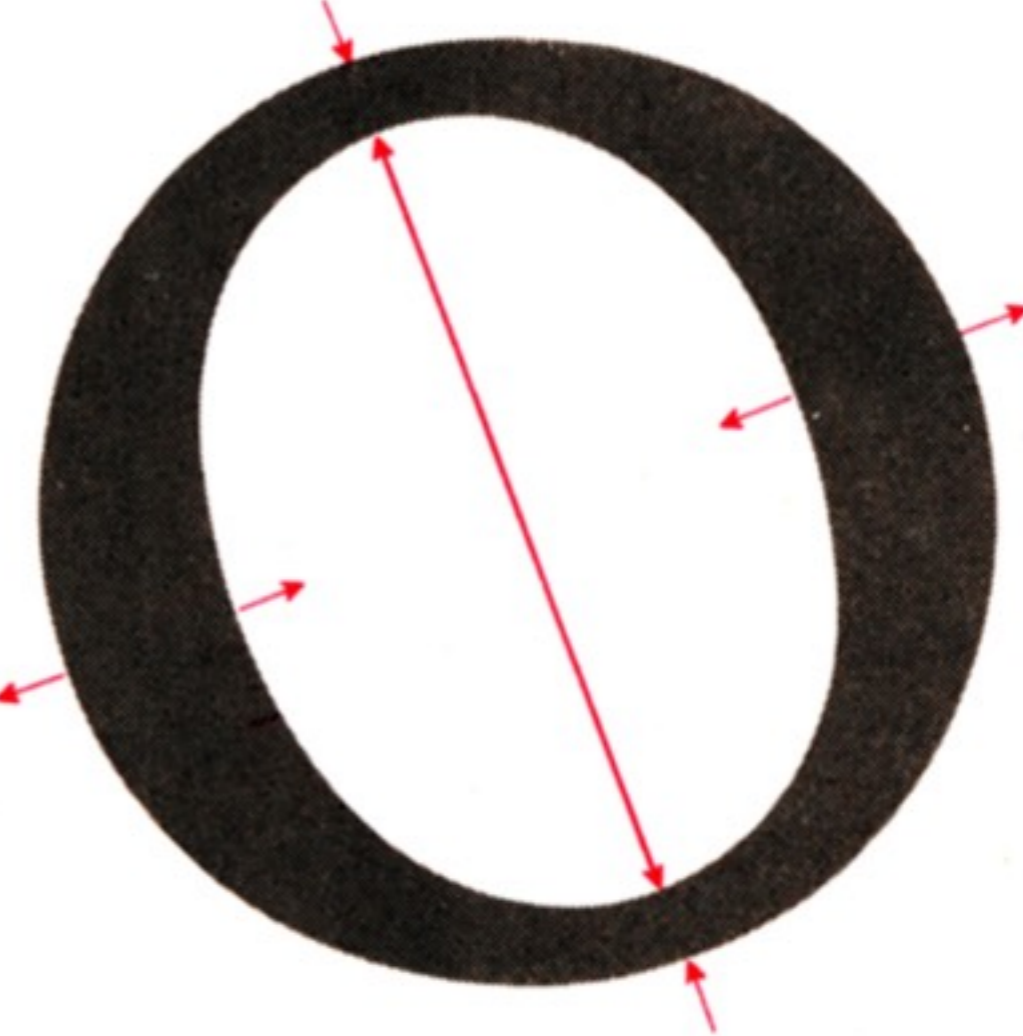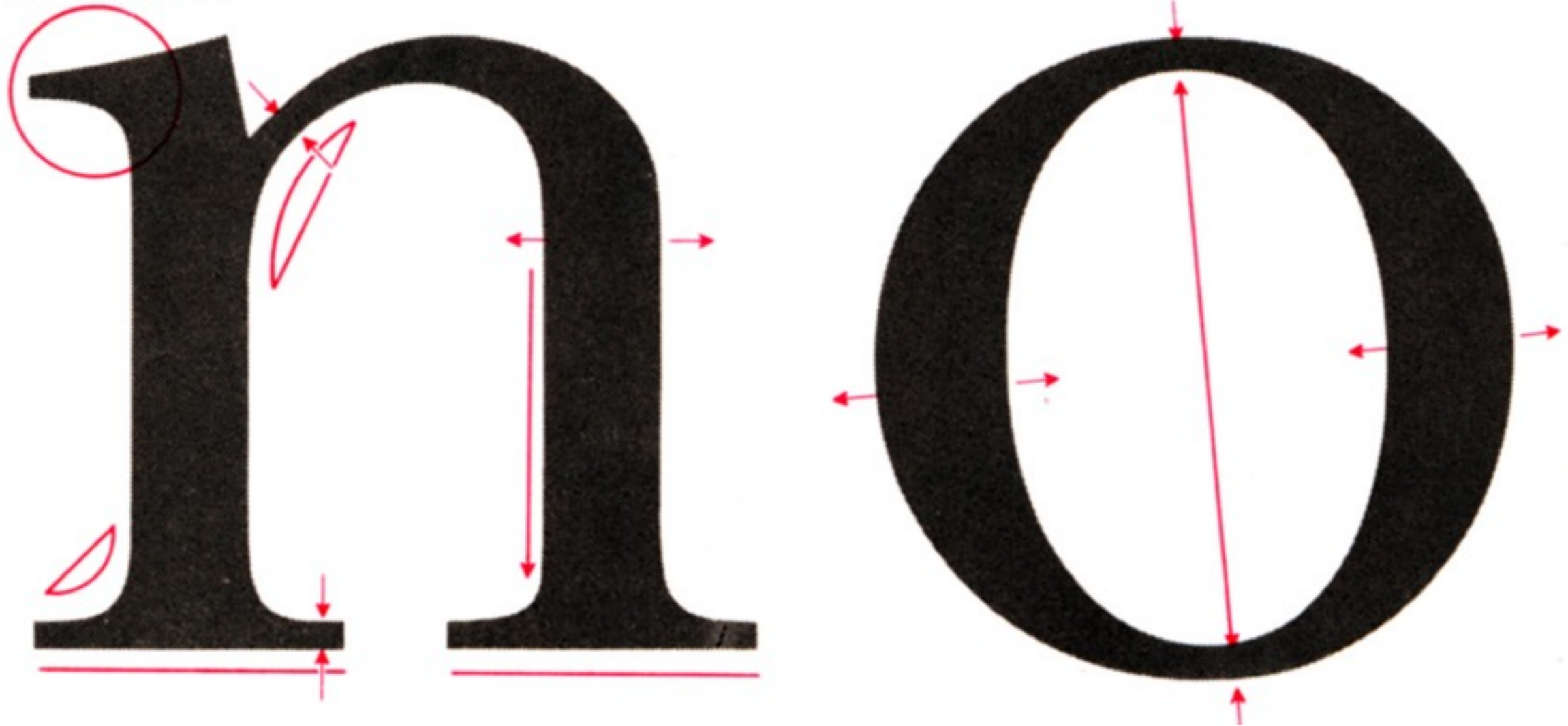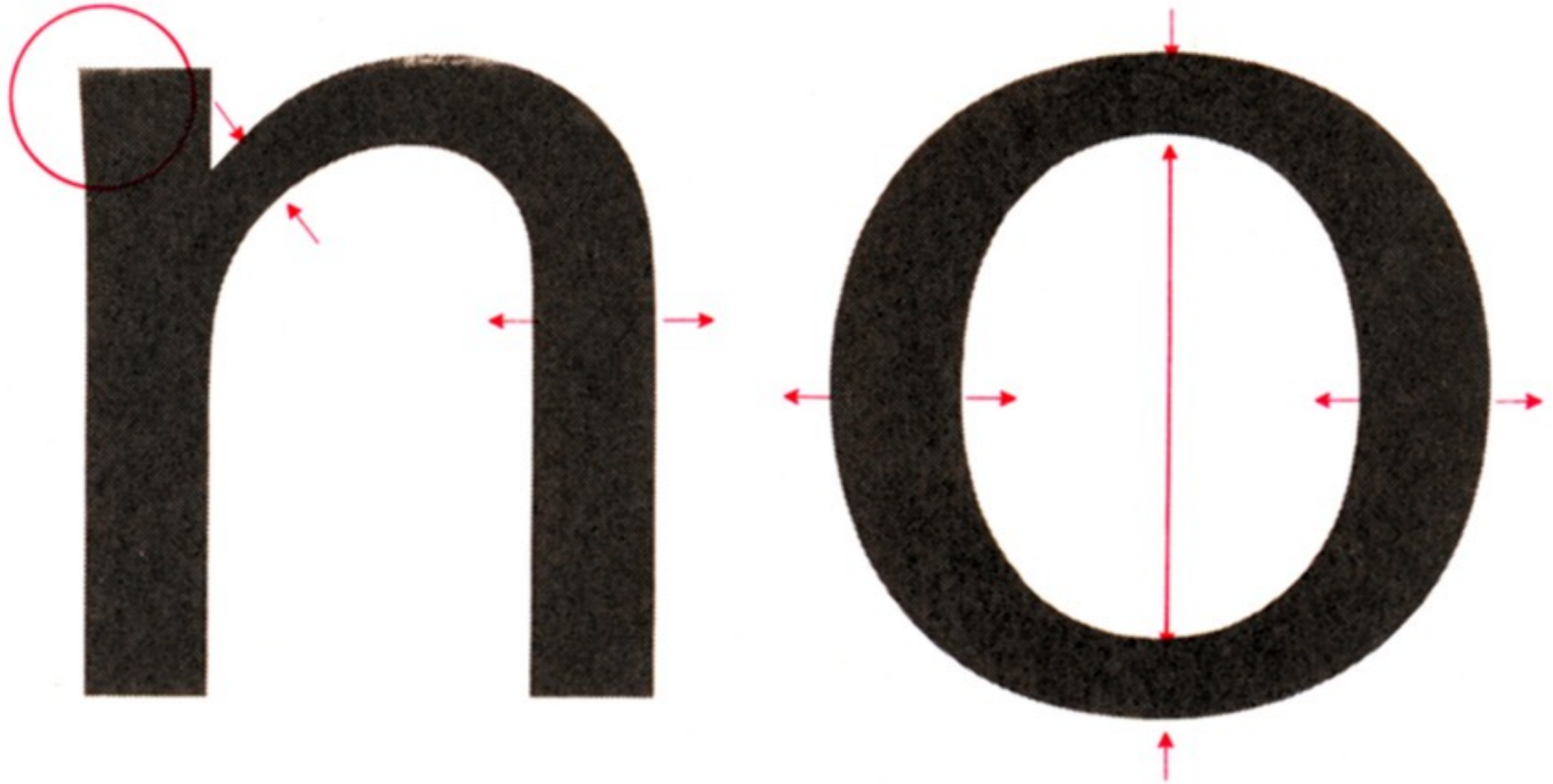| ROMAN MONUMENTAL CAPITALS (FIRST CENTURY) | ROMAN CURSIVE (SECOND CENTURY) | ROMAN UNCIAL (FIFTH CENTURY) | CAROLINGIAN (NINTH CENTURY) | HUMANIST MINUSCULE (15TH CENTURY) | CHANCERY CURSIVE (16TH CENTURY) |

RENAISSANCE

BAROQUE

NEOCLASSICAL

INDUSTRIAL SANS SERIF

Sample digitizations of 'o' and 'n.' *As the resolution decreases, the design changes but maintains certain formal characteristics.* **Top to bottom:** *100 x 100 pixels per em; 50 x 50 pixels per em; 25 x 25 pixels per em.*

The possible forms of a macrofont are subject to the raster restrictions on diversity discussed earlier. We can imagine a potential macrofont as an inverted pyramid. At the low resolutions of the bottom point, only a few different alphabet designs are possible. At the highest resolutions of the broad base, all analog forms are possible. Any actual macrofont will take the form of a branching tree within the myriad potential designs of the pyramid. As with *real* trees, the trunks of most macrofonts will resemble one another, because only a few simple forms are realizable, but the leafy crowns will show the vast diversity of form, pattern, and texture possible at the high resolutions.

Digitizations of the roman Macrofont design. *From top to bottom:* Analog; 100 x 100 pixels per em; 50 x 50 pixels per em; 25 x 25 pixels per em; 12 x 12 pixels per em.

RNQbaeg

RNQbaeg

RNQbaeg
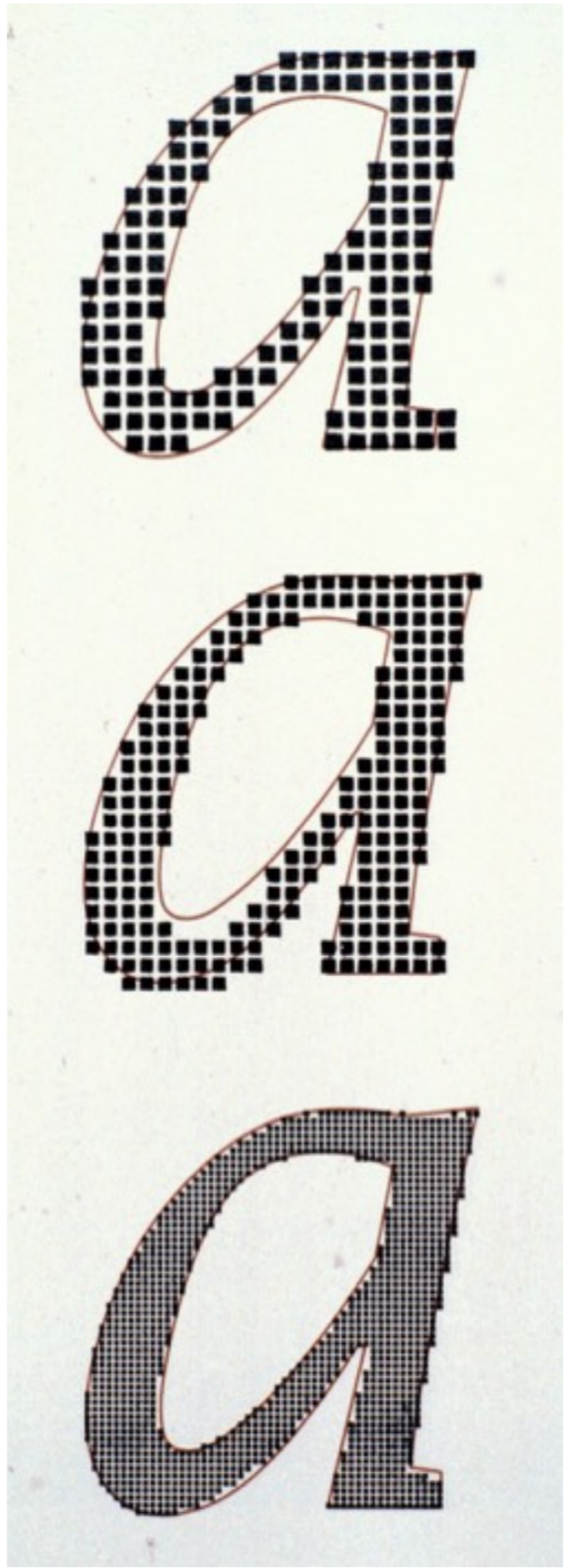
RNQbaeg

RNQbaeg

RNQbaeg

RNQbaeg

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

ABCDEFGHIJKLMNOPQRSTUVWXYZ
abcdefghijklmnopqrstuvwxyz
1234567890

With rue my heart is laden
For golden friends I had,
For many a rose-lipt maiden
And many a lightfoot lad

By brooks too broad for leaping
The lightfoot boys are laid;
The rose-lipt girls are sleeping
In fields where roses fade.

A. E. Housman

n

klmno

klmno

klmno

klmno

space	comma	period	slash	less	greater	A	B	C	D	E	F	G	H	I	J
	,	.	/	<	>	A	B	C	D	E	F	G	H	I	J

K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p

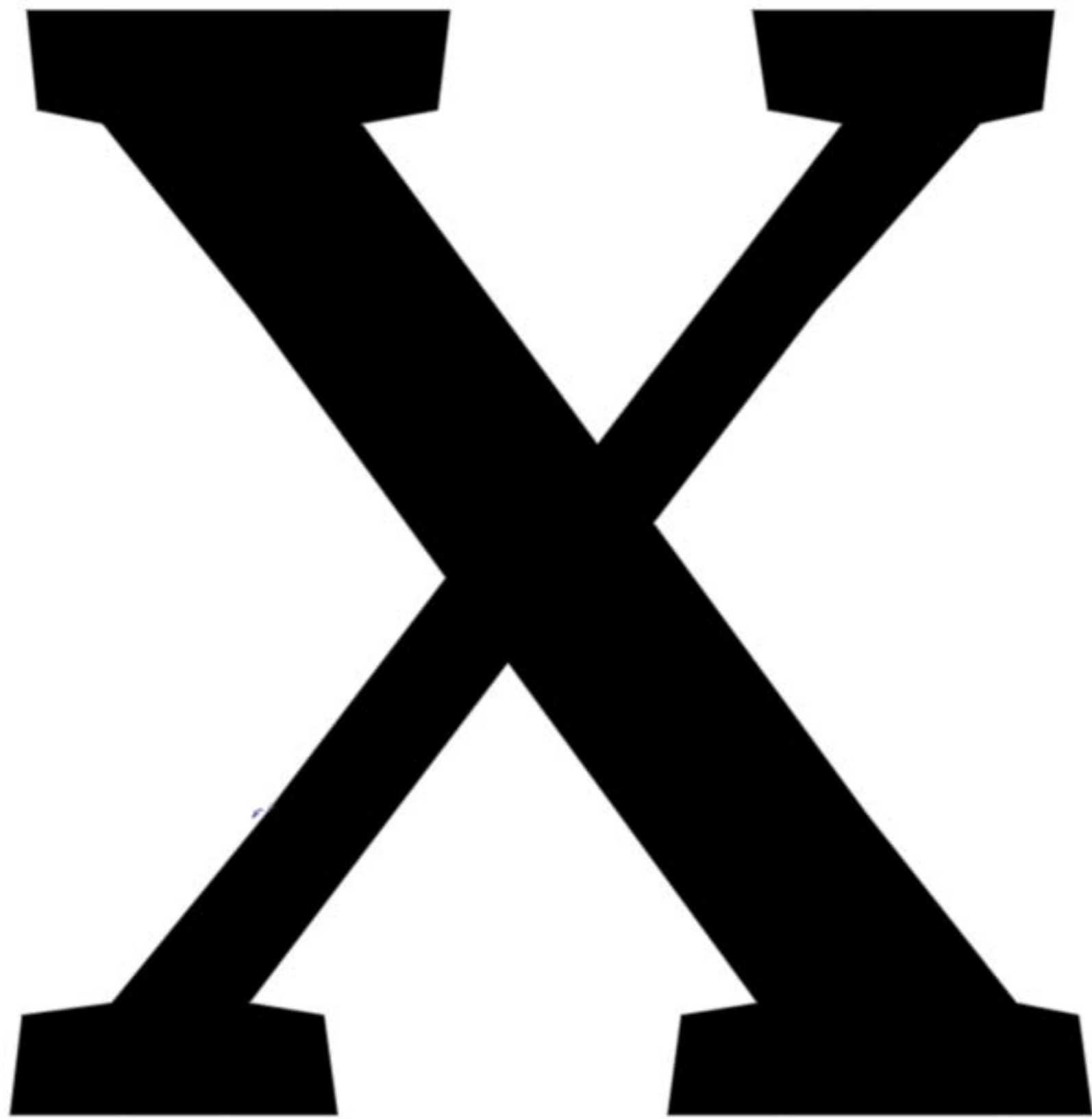| q	r	s	t	u	v	w	x	y	z	mu	dotlessi	dotlessj	epsilon1	Gamma	Theta
q	γ	s	t	u	v	w	x	y	z	μ	$\imath$	$\jmath$	ϵ	Γ	Θ

Lambda	Xi	Pi	Sigma	Upsilon	Phi	Psi	alpha	beta	gamma	delta	epsilon	zeta	eta	theta	iota
Λ	Ξ	Π	Σ	Υ	Φ	Ψ	α	β	γ	δ	ε	ζ	η	θ	ι

kappa	lambda	nu	xi	pi	rho	sigma1	sigma	tau	upsilon	phi	chi	psi	omega	theta1	phi1
κ	λ	ν	ξ	π	ρ	ς	σ	τ	υ	ϕ	χ	ψ	ω	ϑ	φ

pi1	rho1	lscript	weierstras	Omega	arrowhoo	arrowhoo	arrowleftt	arrowleft	arrowrigh	arrowrigh	partialdiff	Delta	trianglerig	trianglele	star
ϖ	ϱ	ℓ	$\wp$	Ω	$'$	$'$	$\leftarrow$	$\longleftarrow$	$\longrightarrow$	$\rightarrow$	∂	Δ	$\triangleright$	$\triangleleft$	$\star$

slurabove	slurbelow	flat	natural	sharp	zerooldst	oneoldsty	twooldsty	threeolds	fouroldsty	fiveoldsty	sixoldstyl	sevenolds	eightolds	nineoldsty	vector
$\frown$	$\smile$	$\flat$	$\natural$	$\sharp$	0	1	2	3	4	5	6	7	8	9	$\vec{\ }$

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
$\mathcal{A}$	$\mathcal{B}$	$\mathcal{C}$	$\mathcal{D}$	$\mathcal{E}$	$\mathcal{F}$	$\mathcal{G}$	$\mathcal{H}$	$\mathcal{I}$	$\mathcal{J}$	$\mathcal{K}$	$\mathcal{L}$	$\mathcal{M}$	$\mathcal{N}$	$\mathcal{O}$	$\mathcal{P}$

Q	R	S	T	U	V	W	X	Y	Z	backslash	braceleft	bar	braceright	section	logicalnot
$\mathcal{Q}$	$\mathcal{R}$	$\mathcal{S}$	$\mathcal{T}$	$\mathcal{U}$	$\mathcal{V}$	$\mathcal{W}$	$\mathcal{X}$	$\mathcal{Y}$	$\mathcal{Z}$	$\backslash$	$\{$	$\mid$	$\}$	§	$\neg$

plusminus	paragraph	periodcen	multiply	divide	dagger	daggerdb	bullet	Rfractur	aleph	arrowleft	arrowup	arrowright	arrowdown	arrowboth	arrownorth
$\pm$	¶	·	$\times$	$\div$	$\dagger$	$\ddagger$	$\bullet$	$\Re$	$\aleph$	$\leftarrow$	$\uparrow$	$\rightarrow$	$\downarrow$	$\leftrightarrow$	$\nwarrow$

arrownorth	arrowsouth	arrowsouth	arrowdbll	arrowdblu	arrowdblr	arrowdbld	arrowdblb	universal	existential	emptyset	nabla	element	owner	coproduct	minus
$\nearrow$	$\searrow$	$\swarrow$	$\Leftarrow$	$\Uparrow$	$\Rightarrow$	$\Downarrow$	$\Leftrightarrow$	$\forall$	$\exists$	$\emptyset$	∇	$\in$	$\ni$	$\amalg$	$-$

minusplus	asteriskm	radical	proportio	infinity	logicaland	logicalor	intersection	union	integral	similar	wreathprod	approxeq	equivasymp	equivalent	lessequal
$\mp$	$*$	$\surd$	$\propto$	∞	$\wedge$	$\vee$	$\cap$	$\cup$	$\int$	$\sim$	$\wr$	$\approx$	$\asymp$	$\equiv$	$\leq$

greatereq	lessmuch	greatermuch	precedes	follows	propersub	propersup	reflexsubs	reflexsup	unionmul	subsetsqe	supersets	intersection	unionsq	circleplus	circleminus
$\geq$	$\ll$	$\gg$	$\prec$	$\succ$	$\subset$	$\supset$	$\subseteq$	$\supseteq$	$\uplus$	$\sqsubseteq$	$\sqsupseteq$	$\sqcap$	$\sqcup$	$\oplus$	$\ominus$

circlemult	circledivid	circledot	turnstileleft	turnstileright	latticetop	perpendic	diamondr	ceilingleft	ceilingright	floorleft	floorright	triangle	triangleinv	openbullet	spade
$\otimes$	$\oslash$	$\odot$	$\vdash$	$\dashv$	$\top$	$\perp$	$\diamond$	$\lceil$	$\rceil$	$\lfloor$	$\rfloor$	$\triangle$	$\triangledown$	$\circ$	$\spadesuit$

club	heart	diamond	similareq	prime	negations	mapsto	Ifractur	angbracketleft	angbracketright	bardbl	arrowboth	arrowdbl	circlecopy	precedeseq	followseq
$\clubsuit$	$\heartsuit$	$\diamondsuit$	$\simeq$	$\prime$	/	$\mapsto$	$\Im$	$\langle$	$\rangle$	$\|$	$\updownarrow$	$\Updownarrow$	$\bigcirc$	$\preceq$	$\succeq$

arrowvert	parenleftt	parenlefte	parenleftb	bracketlef	bracketlef	bracketlef	braceleftt	braceleftm	braceleftb	braceex	parenrigh	parenrigh	parenrigh	bracketrig	bracketrig
bracketrig	bracerigh	bracerigh	bracerigh	parenrigh	bracketlef	bracketrig	floorleftBi	floorright	ceilingleft	ceilingrig	braceleftB	bracerigh	angbrack	angbrack	slashBig
backslash	slashBig	backslash	angbrack	angbrack	unionsqte	unionsqd	continteg	continteg	circledott	circledotd	circleplus	circleplus	circlemult	circlemult	summatio
productte	integralte	uniontext	intersecti	unionmul	logicaland	logicalort	summatio	productdi	integraldi	uniondisp	intersecti	unionmul	logicaland	logicalord	coproduct
coproduct	hatwide	hatwider	hatwidest	tildewide	tildewider	tildewides	bracketlef	bracketrig	floorleftBi	floorright	ceilingleft	ceilingrig	braceleftB	bracerigh	radicalbig
radicalBig	radicalbig	radicalBig	radicalbt	radicalver	radicaltp	arrowvert	arrowtp	arrowbt	bracehtip	bracehtip	bracehtip	bracehtip	arrowdblt	parenleftb	parenrigh
bracketlef	bracketrig	floorleftbi	floorright	ceilingleft	ceilingrig	braceleftb	bracerigh	angbrack	angbrack	vextendsi	vextenddc	slashbig	backslash	parenleftB	parenrigh
parenleftb	parenrigh	bracketlef	bracketrig	floorleftbi	floorright	ceilingleft	ceilingrig	braceleftb	bracerigh	angbrack	angbrack	slashbigg	backslash	parenleftB	arrowdblb

$$a = b \qquad c \neq d$$

$$p \geq q \qquad v \div w$$

$$a \otimes b \qquad c \oplus d$$

$$p \pm q \qquad v \ominus w$$

$$A \leq B \qquad C \supseteq D$$

$$P \sqsupseteq Q \qquad V \cup W$$

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$$P \sqsupseteq Q \qquad V \cup W$$

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	F020	F021	F022	F023	F024	F025	F026	F027	F028	F029	F02A	F02B	F02C	F02D	F02E	F02F
		+	=	−	·	×	∗	÷	◇	±	∓	⊕	⊖	⊗	⊘	⊙

	F030	F031	F032	F033	F034	F035	F036	F037	F038	F039	F03A	F03B	F03C	F03D	F03E	F03F
	◯	∘	●	≍	≡	⊆	⊇	≤	≥	≼	≽	∼	≈	⊂	⊃	≪

	F040	F041	F042	F043	F044	F045	F046	F047	F048	F049	F04A	F04B	F04C	F04D	F04E	F04F
	≫	≺	≻	←	→	↑	↓	↔	↗	↘	≃	⇐	⇒	⇑	⇓	⇔

	F050	F051	F052	F053	F054	F055	F056	F057	F058	F059	F05A	F05B	F05C	F05D	F05E	F05F
	↖	↙	∝	′	∞	∈	∋	△	▽	/	⋅	∀	∃	¬	∅	ℜ

	F060	F061	F062	F063	F064	F065	F066	F067	F068	F069	F06A	F06B	F06C	F06D	F06E	F06F
	ℑ	⊤	⊥	ℵ	𝒜	ℬ	𝒞	𝒟	ℰ	ℱ	𝒢	ℋ	ℐ	𝒥	𝒦	ℒ

	F070	F071	F072	F073	F074	F075	F076	F077	F078	F079	F07A	F07B	F07C	F07D	F07E	F07F
	ℳ	𝒩	𝒪	𝒫	𝒬	ℛ	𝒮	𝒯	𝒰	𝒱	𝒲	𝒳	𝒴	𝒵	∪	

	F080	F081	F082	F083	F084	F085	F086	F087	F088	F089	F08A	F08B	F08C	F08D	F08E	F08F
	∩	⊎	∧	∨	⊢	⊣	⌊	⌋	⌈	⌉	{	}	⟨	⟩		‖

	F090	F091	F092	F093	F094	F095	F096	F097	F098	F099	F09A	F09B	F09C	F09D	F09E	F09F
	↕	⇕	\	≀	√	∐	▽	∫	⊔	⊓	⊑	⊒	§	†	‡	¶

	F0A0	F0A1	F0A2	F0A3	F0A4	F0A5	F0A6	F0A7	F0A8	F0A9	F0AA	F0AB	F0AC	F0AD	F0AE	F0AF
	♣	♦	♥	♠	‾	ℭ	△	∈	∋	Π	Σ	∔	∟	∠	∡	∢

	F0B0	F0B1	F0B2	F0B3	F0B4	F0B5	F0B6	F0B7	F0B8	F0B9	F0BA	F0BB	F0BC	F0BD	F0BE	F0BF
	∬	∭	∴	∵	⋮	∷	≐	≑	≒	≓	∾	∽	≁	≈	≊	≋

	F0C0	F0C1	F0C2	F0C3	F0C4	F0C5	F0C6	F0C7	F0C8	F0C9	F0CA	F0CB	F0CC	F0CD	F0CE	F0CF
	≈	≋	≋	≦	≎	≏	≐	÷	≓	≒	≔	≕	⧦	≗	≦	≙

	F0D0	F0D1	F0D2	F0D3	F0D4	F0D5	F0D6	F0D7	F0D8	F0D9	F0DA	F0DB	F0DC	F0DD	F0DE	F0DF
	≚	≛	≜	≝	≞	≟	≣	≦	≧	≲	≳	≶	≷	≴	≵	⊌

	F0E0	F0E1	F0E2	F0E3	F0E4	F0E5	F0E6	F0E7	F0E8	F0E9	F0EA	F0EB	F0EC	F0ED	F0EE	F0EF
	⊍	⌐	¬	⊚	⊛	⊖	⦶	⊞	⊟	⊠	⊡	⊩	⊬	⊪	≺	≻

	F0F0	F0F1	F0F2	F0F3	F0F4	F0F5	F0F6	F0F7	F0F8	F0F9	F0FA	F0FB	F0FC	F0FD	F0FE	F0FF
	◁	▷	⊶	⊷	⊸	∻	⩚	⩛	⌐	⊿	⋐	⋑	⋒	⋓	⋏	⋎

space	plus	colon	equal	A	B	C	D	E	F	G	H	I	J	K	L
	$+$	$:$	$=$	$\mathcal{A}$	$\mathcal{B}$	$\mathcal{C}$	$\mathcal{D}$	$\mathcal{E}$	$\mathcal{F}$	$\mathcal{G}$	$\mathcal{H}$	$\mathcal{I}$	$\mathcal{J}$	$\mathcal{K}$	$\mathcal{L}$

M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	backslash	braceleft
$\mathcal{M}$	$\mathcal{N}$	$\mathcal{O}$	$\mathcal{P}$	$\mathcal{Q}$	$\mathcal{R}$	$\mathcal{S}$	$\mathcal{T}$	$\mathcal{U}$	$\mathcal{V}$	$\mathcal{W}$	$\mathcal{X}$	$\mathcal{Y}$	$\mathcal{Z}$	$\backslash$	$\{$

bar	braceright	section	logicalnot	plusminus	paragraph	periodcen	multiply	divide	dagger	daggerdbl	bullet	prime1	Rfractur	aleph	arrowleft
$\mid$	$\}$	$\S$	$\neg$	$\pm$	$\P$	$\cdot$	$\times$	$\div$	$\dagger$	$\ddagger$	$\bullet$	$\prime$	$\Re$	$\aleph$	$\leftarrow$

arrowup	arrowright	arrowdown	arrowboth	arrownorth	arrownorth	arrowsouth	arrowsouth	arrowdbl	arrowdbl	arrowdbl	arrowdbl	arrowdbl	universal	existential	emptyset
$\uparrow$	$\rightarrow$	$\downarrow$	$\leftrightarrow$	$\nwarrow$	$\nearrow$	$\searrow$	$\swarrow$	$\Leftarrow$	$\Uparrow$	$\Rightarrow$	$\Downarrow$	$\Leftrightarrow$	$\forall$	$\exists$	$\emptyset$

increment	nabla	element	owner	product	coproduct	summation	minus	minusplus	dotplus	asteriskm	radical	proportio	infinity	rightangle	angle
$\triangle$	∇	$\in$	$\ni$	$\prod$	$\coprod$	$\sum$	$-$	$\mp$	$\dotplus$	$\ast$	$\surd$	$\propto$	∞	$\llcorner$	$\angle$

measured	spherical	logicaland	logicalor	intersection	union	integral	therefore	because	proportio	dotminus	excess	geomprop	homothet	similar	lazysinv
$\measuredangle$	$\sphericalangle$	$\wedge$	$\vee$	$\cap$	$\cup$	$\int$	$\therefore$	$\because$	$::$	$\dotminus$	$\doteqdot$	$::$	$\div$	$\sim$	$\backsim$

sine	wreathpr	minustild	approxor	approxeq	almostor	tildetrpl	allequal	equivasy	geomequi	difference	approach	geomequi	approxeq	imageora	colonequa
$\sim$	$\wr$	$\approx$	$\cong$	$\approx$	$\approxeq$	$\approx$	$\eqsim$	$\asymp$	$\Bumpeq$	$\doteq$	$\fallingdotseq$	$\risingdotseq$	$\fallingdotseq$	$\eqcolon$	$:=$

equalcolo	ringinequ	ringequal	correspon	estimates	equiangu	deltaequa	definequa	measureq	questione	equivalen	strictequi	lessequal	greatereq	lessdbleq	greaterdb
$=:$	$\eqcirc$	$\circeq$	$\triangleq$	$\wedgeq$	$\veeeq$	$\triangleq$	$\overset{def}{=}$	$\overset{m}{=}$	$\overset{?}{=}$	$\equiv$	$\equiv$	$\leq$	$\geq$	$\leqq$	$\geqq$

lessmuch	greaterm	lessequiv	greatereq	lessorgrea	greaterorl	precedes	follows	precedeq	followseq	propersub	propersup	reflexsub	reflexsup	multiset	multiplym
$\ll$	$\gg$	$\lesssim$	$\gtrsim$	$\lessgtr$	$\gtrless$	$\prec$	$\succ$	$\preccurlyeq$	$\succcurlyeq$	$\subset$	$\supset$	$\subseteq$	$\supseteq$	$\uplus$	$\uplus$

unionmul	squareim	squareori	subsetsq	supersets	intersecti	unionsq	circleplus	circlemin	circlemul	circledivi	circledot	circlering	circleaste	circleequa	squareplu
$\uplus$	$\sqsubset$	$\sqsupset$	$\sqsubseteq$	$\sqsupseteq$	$\sqcap$	$\sqcup$	$\oplus$	$\ominus$	$\otimes$	$\oslash$	$\odot$	$\circledcirc$	$\circledast$	$\ominus$	$\boxplus$

squaremi	squaremu	squaredot	turnstilel	turnstiler	latticetop	perpendic	satisfy	force	lowerran	higherran	triangleft	triangrigh	hermitcor	nand	nor
$\boxminus$	$\boxtimes$	$\boxdot$	$\vdash$	$\dashv$	$\top$	$\perp$	$\models$	$\Vdash$	$\prec$	$\succ$	$\vartriangleleft$	$\vartriangleright$	$\divideontimes$	$\barwedge$	$\veebar$

rightangle	righttrian	diamondn	curlor	curland	subsetdbl	supersetd	uniondbl	intersecti	perspcorr	ceilingleft	ceilingrig	floorleft	floorright	triangle	triangleim
$\lrcorner$	$\triangledown$	$\diamond$	$\curlyvee$	$\curlywedge$	$\Subset$	$\Supset$	$\Cup$	$\Cap$	$\overline{\wedge}$	$\lceil$	$\rceil$	$\lfloor$	$\rfloor$	$\triangle$	$\triangledown$

openbulle	spade	club	heart	diamond	circlecopy	precedese	followseq	similareq	prime	negations	mapsto	lfractur	angbrack	angbrack	bardbl
$\circ$	$\spadesuit$	$\clubsuit$	$\heartsuit$	$\blacklozenge$	$\bigcirc$	$\preccurlyeq$	$\succcurlyeq$	$\simeq$	$\prime$	$/$	$\mapsto$	$\mathfrak{I}$	$\langle$	$\rangle$	$\|$

arrowbot	arrowdbl	radicalext	lessmuch	greaterm	radical1	lazys	circlebar	satisfiedb	negeighte	eighteent	eighthem	tenthem	.notdef		
$\updownarrow$	$\Updownarrow$	$\overline{}$	$\lll$	$\ggg$	$\sqrt{}$	$\backsim$	$\ominus$	$\vDash$							

0020	0028	0029	002C	002E	002F	0030	0031	0032	0033	0034	0035	0036	0037	0038	0039
	(	)	,	.	/	0	1	2	3	4	5	6	7	8	9

003C	003E	0041	0042	0043	0044	0045	0046	0047	0048	0049	004A	004B	004C	004D	004E
<	>	A	B	C	D	E	F	G	H	I	J	K	L	M	N

004F	0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	005A	005B	005D	0061	0062
O	P	Q	R	S	T	U	V	W	X	Y	Z	[	]	a	b

0063	0064	0065	0066	0067	0068	0069	006A	006B	006C	006D	006E	006F	0070	0071	0072
c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r

0073	0074	0075	0076	0077	0078	0079	007A	00B5	0131	019B	0237	025B	0261	0393	0398
s	t	u	v	w	x	y	z	μ	ı	λ	ȷ	ε	ɡ	Γ	Θ

039B	039E	03A0	03A3	03A5	03A6	03A8	03B1	03B2	03B3	03B4	03B5	03B6	03B7	03B8	03B9
Λ	Ξ	Π	Σ	Υ	Φ	Ψ	α	β	γ	δ	ε	ζ	η	θ	ι

03BA	03BB	03BD	03BE	03BF	03C0	03C1	03C2	03C3	03C4	03C5	03C6	03C7	03C8	03C9	03D1
κ	λ	ν	ξ	o	π	ρ	ς	σ	τ	υ	ϕ	χ	ψ	ω	ϑ

03D5	03D6	03F0	03F1	05D2	2107	210F	2113	2118	2126	21A9	21AA	21BC	21BD	21C0	21C1
φ	ϖ	ϰ	ϱ	λ	Ɛ	ℏ	ℓ	℘	Ω	‘	’	←	←	→	→

2201	2202	2206	2208	220B	222C	222D	222E	222F	2230	2231	2232	2233	223D	226C	227C
∁	∂	∆	∈	∋	∬	∭	∮	∯	∰	∱	∲	∳	∽	≬	≼

227D	227F	229D	22A6	22A7	22AA	22B2	22B3	22B6	22B7	22B8	22BA	22BB	22C6	22C7	22C8
≽	≿	⊝	⊦	⊧	⊪	⊲	⊳	⊶	⊷	⊸	⊺	⊻	⋆	⋇	⋈

22C9	22CA	22CB	22CC	22CD	22D4	22D6	22D7	22D8	22D9	22DA	22DB	22DC	22DD	22DE	22DF
⋉	⋊	⋋	⋌	⋍	⋔	⋖	⋗	⋘	⋙	⋚	⋛	⋜	⋝	⋞	⋟

2322	2323	25ED	25EE	266D	266E	266F	---	---	---	---	---	---	---	---	---
⌢	⌣	◭	◮	♭	♮	♯	↱	⌢	⟦	⟧	⊣	⊃	℧	⊐	⊤

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ℏ	ȥ	∅	ℓ	ℓ	ℓ	`	⊫	`	®	Ⓢ	✠	/	⊣	⊣	\

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≲	≳	≤	≥	⋚	⋛	⋨	⊒	⊒	‖	‖					

2188	2189	218A	218B	218C	218D	218E	218F	0020	0021	0022	0023	0024	0025	0026	0027	0028	0029	002A	002B	002C	002D	002E	002F	0030	0031	0032	0033
									!	"	#	$	%	&	'	(	)	*	+	,	-	.	/	0	1	2	3

0034	0035	0036	0037	0038	0039	003A	003B	003C	003D	003E	003F	0040	0041	0042	0043	0044	0045	0046	0047	0048	0049	004A	0048	004C	004D	004E	004F
4	5	6	7	8	9	:	;	<	=	>	?	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O

0050	0051	0052	0053	0054	0055	0056	0057	0058	0059	005A	005B	005C	005D	005E	005F	0060	0061	0062	0063	0064	0065	0066	0067	0068	0069	006A	0068
P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_	`	a	b	c	d	e	f	g	h	i	j	k

006C	006D	006E	006F	0070	0071	0072	0073	0074	0075	0076	0077	0078	0079	007A	007B	007C	007D	007E	00A0	00A1	00A2	00A3	00A4	00A5	00A6	00A7	00A8
l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~		¡	¢	£	¤	¥	¦	§	¨

00A9	00AA	00AB	00AC	00AD	00AE	00AF	00B0	00B1	00B2	00B3	00B4	00B5	00B6	00B7	00B8	00B9	00BA	00BB	00BC	00BD	00BE	00BF	00D7	00F7	0131	019B	0237
◯	ª	«	¬		®	¯	°	±	²	³	´	µ	¶	·	¸	¹	º	»	¼	½	¾	¿	×	÷	ı	ƛ	ȷ

02C6	02C7	02D8	02D9	02DA	02DB	02DC	02DD	0300	0301	0302	0303	0304	0306	0307	0308	030A	030B	030C	0327	0338	0391	0392	0393	0394	0395	0396	0397
ˆ	ˇ	˘	˙	˚	˛	˜	˝	̀	́	̂	̃	̄	̆	̇	̈	̊	̋	̌	̧	̸	Α	Β	Γ	Δ	Ε	Ζ	Η

0398	0399	039A	039B	039C	039D	039E	039F	03A0	03A1	03A3	03A4	03A5	03A6	03A7	03A8	03A9	03B1	03B2	03B3	03B4	03B5	03B6	03B7	03B8	03B9	03BA	03BB
Θ	Ι	Κ	Λ	Μ	Ν	Ξ	Ο	Π	Ρ	Σ	Τ	Υ	Φ	Χ	Ψ	Ω	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ

03BC	03BD	03BE	03BF	03C0	03C1	03C2	03C3	03C4	03C5	03C6	03C7	03C8	03C9	03D1	03D2	03D5	03D6	03DC	03F0	03F1	03F5	2013	2014	2016	2018	2019	201A
μ	ν	ξ	ο	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	ϑ	ϒ	ϕ	ϖ	Ϝ	ϰ	ϱ	ϵ	–	—	‖	'	'	‚

201C	201D	201E	2020	2021	2022	2026	2030	2032	2033	2034	2035	2036	2037	2039	203A	2040	2044	2057	20AC	20D6	20D7	20DB	20DC	20E1	20EE	20EF	2102
"	"	„	†	‡	•	…	‰	′	″	‴	‵	‶	‷	‹	›	⁀	⁄	⁗	€	⃖	⃗	⃛	⃜	⃡	⃮	⃯	ℂ

2107	210A	210B	210C	210D	210E	210F	2110	2111	2112	2113	2115	2118	2119	211A	211B	211C	211D	2122	2124	2127	2128	212C	212D	212F	2130	2131	2132
Ɛ	ℊ	ℋ	ℌ	ℍ	ℎ	ℏ	ℐ	ℑ	ℒ	ℓ	ℕ	℘	ℙ	ℚ	ℛ	ℜ	ℝ	™	ℤ	℧	ℨ	ℬ	ℭ	ℯ	ℰ	ℱ	Ⅎ

2133	2134	2135	2136	2137	2138	2190	2191	2192	2193	2194	2195	2196	2197	2198	2199	219A	219B	219C	219D	219E	219F	21A0	21A1	21A2	21A3	21A4	21A5
ℳ	ℴ	ℵ	ℶ	ℷ	ℸ	←	↑	→	↓	↔	↕	↖	↗	↘	↙	↚	↛	↜	↝	↞	↟	↠	↡	↢	↣	↤	↥

21A6	21A7	21A8	21A9	21AA	21AB	21AC	21AD	21AE	21AF	21B0	21B1	21B2	21B3	21B4	21B5	21B6	21B7	21B8	21B9	21BA	21BB	21BC	21BD	21BE	21BF	21C0	21C1
↦	↧	↨	↩	↪	↫	↬	↭	↮	↯	↰	↱	↲	↳	↴	↵	↶	↷	↸	↹	↺	↻	↼	↽	↾	↿	⇀	⇁

21C2	21C3	21C4	21C5	21C6	21C7	21C8	21C9	21CA	21CB	21CC	21CD	21CE	21CF	21D0	21D1	21D2	21D3	21D4	21D5	21D6	21D7	21D8	21D9	21DA	21DB	21DC	21DD
⇂	⇃	⇄	⇅	⇆	⇇	⇈	⇉	⇊	⇋	⇌	⇍	⇎	⇏	⇐	⇑	⇒	⇓	⇔	⇕	⇖	⇗	⇘	⇙	⇚	⇛	⇜	⇝

21DE	21DF	21E0	21E1	21E2	21E3	21E4	21E5	21E6	21E7	21E8	21E9	21EA	21EB	21EC	21ED	21EE	21EF	21F0	21F1	21F2	21F3	21F4	21F5	21F6	21F7	21F8	21F9
⇞	⇟	⇠	⇡	⇢	⇣	⇤	⇥	⇦	⇧	⇨	⇩	⇪	⇫	⇬	⇭	⇮	⇯	⇰	⇱	⇲	⇳	⇴	⇵	⇶	⇷	⇸	⇹

21FA	21FB	21FC	21FD	21FE	21FF	2200	2201	2202	2203	2204	2205	2206	2207	2208	2209	220A	220B	220C	220D	220E	220F	2210	2211	2212	2213	2214	2215
⇺	⇻	⇼	⇽	⇾	⇿	∀	∁	∂	∃	∄	∅	∆	∇	∈	∉	∊	∋	∌	∍	∎	∏	∐	∑	−	∓	∔	∕

2216	2217	2218	2219	221A	221B	221C	221D	221E	221F	2220	2221	2222	2223	2224	2225	2226	2227	2228	2229	222A	222B	222C	222D	222E	222F	2230	2231

2232	2233	2234	2235	2236	2237	2238	2239	223A	223B	223C	223D	223E	223F	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	224A	224B	224C	224D

224E	224F	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	225A	225B	225C	225D	225E	225F	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269

226A	226B	226C	226D	226E	226F	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	227A	227B	227C	227D	227E	227F	2280	2281	2282	2283	2284	2285

2286	2287	2288	2289	228A	228B	228C	228D	228E	228F	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	229A	229B	229C	229D	229E	229F	22A0	22A1

22A2	22A3	22A4	22A5	22A6	22A7	22A8	22A9	22AA	22AB	22AC	22AD	22AE	22AF	22B0	22B1	22B2	22B3	22B4	22B5	22B6	22B7	22B8	22B9	22BA	22BB	22BC	22BD

22BE	22BF	22C0	22C1	22C2	22C3	22C4	22C5	22C6	22C7	22C8	22C9	22CA	22CB	22CC	22CD	22CE	22CF	22D0	22D1	22D2	22D3	22D4	22D5	22D6	22D7	22D8	22D9

22DA	22DB	22DC	22DD	22DE	22DF	22E0	22E1	22E2	22E3	22E4	22E5	22E6	22E7	22E8	22E9	22EA	22EB	22EC	22ED	22EE	22EF	22F0	22F1	22F2	22F3	22F4	22F5

22F6	22F7	22F8	22F9	22FA	22FB	22FC	22FD	22FE	22FF	2306	2308	2309	230A	230B	2320	2321	2322	2323	239B	239C	239D	239E	239F	23A0	23A1	23A2	23A3

23A4	23A5	23A6	23A7	23A8	23A9	23AA	23AC	23AD	23AE	23B7	23DC	23DD	23DE	23DF	24C8	25A0	25A1	25B2	25B3	25B4	25B5	25B6	25B7	25B8	25B9	25BC

258D	25BE	25BF	25C0	25C1	25C2	25C3	25C6	25CA	25CB	25CF	25E6	2660	2663	2665	2666	266D	266E	266F	2713	2720	27C2	27E6	27E7	27E8	27E9	27F5	27F6

27F7	27F8	27F9	27FA	27FB	27FC	2A00	2A01	2A02	2A03	2A04	2A05	2A06	2A07	2A08	2A09	2A0A	2A0B	2A0C	2A0D	2A0E	2A0F	2A10	2A11	2A12	2A13	2A14	2A15

2A16	2A17	2A18	2A19	2A1A	2A1B	2A1C	2A1D	2A1E	2A1F	2A20	2A21	2A22	2A23	2A24	2A25	2A26	2A27	2A28	2A29	2A2A	2A2B	2A2C	2A2D	2A2E	2A2F	2A30	2A31

2A32	2A33	2A34	2A35	2A36	2A37	2A38	2A39	2A3A	2A3B	2A3C	2A3D	2A3E	2A3F	2A40	2A41	2A42	2A43	2A44	2A45	2A46	2A47	2A48	2A49	2A4A	2A4B	2A4C	2A4D

2A4E	2A4F	2A50	2A51	2A52	2A53	2A54	2A55	2A56	2A57	2A58	2A59	2A5A	2A5B	2A5C	2A5D	2A5E	2A5F	2A60	2A61	2A62	2A63	2A64	2A65	2A66	2A67	2A68	2A69

1D539	1D53B	1D53C	1D53D	1D53E	1D540	1D541	1D542	1D543	1D544	1D546	1D54A	1D54B	1D54C	1D54D	1D54E	1D54F	1D550	1D55C	1D574	1D57D	1D5A0	1D5A1	1D5A2	1D5A3	1D5A4	1D5A5	1D5A6
B	D	E	F	G	I	J	K	L	M	O	S	T	U	V	W	X	Y	k	𝕴	𝕽	A	B	C	D	E	F	G
1D5A7	1D5A8	1D5A9	1D5AA	1D5AB	1D5AC	1D5AD	1D5AE	1D5AF	1D5B0	1D5B1	1D5B2	1D5B3	1D5B4	1D5B5	1D5B6	1D5B7	1D5B8	1D5B9	1D5BA	1D5BB	1D5BC	1D5BD	1D5BE	1D5BF	1D5C0	1D5C1	1D5C2
H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	a	b	c	d	e	f	g	h	i
1D5C3	1D5C4	1D5C5	1D5C6	1D5C7	1D5C8	1D5C9	1D5CA	1D5CB	1D5CC	1D5CD	1D5CE	1D5CF	1D5D0	1D5D1	1D5D2	1D5D3	1D5D4	1D5D5	1D5D6	1D5D7	1D5D8	1D5D9	1D5DA	1D5DB	1D5DC	1D5DD	1D5DE
j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	A	B	C	D	E	F	G	H	I	J	K
1D5DF	1D5E0	1D5E1	1D5E2	1D5E3	1D5E4	1D5E5	1D5E6	1D5E7	1D5E8	1D5E9	1D5EA	1D5EB	1D5EC	1D5ED	1D5EE	1D5EF	1D5F0	1D5F1	1D5F2	1D5F3	1D5F4	1D5F5	1D5F6	1D5F7	1D5F8	1D5F9	1D5FA
L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	a	b	c	d	e	f	g	h	i	k	l	m
1D5FB	1D5FC	1D5FD	1D5FE	1D5FF	1D600	1D601	1D602	1D603	1D604	1D605	1D606	1D607	1D608	1D609	1D60A	1D60B	1D60C	1D60D	1D60E	1D60F	1D610	1D611	1D612	1D613	1D614	1D615	1D616
n	o	p	q	r	s	t	u	v	w	x	y	z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1D617	1D618	1D619	1D61A	1D61B	1D61C	1D61D	1D61E	1D61F	1D620	1D621	1D622	1D623	1D624	1D625	1D626	1D627	1D628	1D629	1D62A	1D62B	1D62C	1D62D	1D62E	1D62F	1D630	1D631	1D632
P	Q	R	S	T	U	V	W	X	Y	Z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
1D633	1D634	1D635	1D636	1D637	1D638	1D639	1D63A	1D63B	1D63C	1D63D	1D63E	1D63F	1D640	1D641	1D642	1D643	1D644	1D645	1D646	1D647	1D648	1D649	1D64A	1D64B	1D64C	1D64D	1D64E
r	s	t	u	v	w	x	y	z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1D64F	1D650	1D651	1D652	1D653	1D654	1D655	1D656	1D657	1D658	1D659	1D65A	1D65B	1D65C	1D65D	1D65E	1D65F	1D660	1D661	1D662	1D663	1D664	1D665	1D666	1D667	1D668	1D669	1D66A
T	U	V	W	X	Y	Z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u
1D66B	1D66C	1D66D	1D66E	1D66F	1D670	1D671	1D672	1D673	1D674	1D675	1D676	1D677	1D678	1D679	1D67A	1D67B	1D67C	1D67D	1D67E	1D67F	1D680	1D681	1D682	1D683	1D684	1D685	1D686
v	w	x	y	z	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W
1D687	1D688	1D689	1D68A	1D68B	1D68C	1D68D	1D68E	1D68F	1D690	1D691	1D692	1D693	1D694	1D695	1D696	1D697	1D698	1D699	1D69A	1D69B	1D69C	1D69D	1D69E	1D69F	1D6A0	1D6A1	1D6A2
X	Y	Z	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y
1D6A3	1D6A4	1D6A5	1D6A8	1D6A9	1D6AA	1D6AB	1D6AC	1D6AD	1D6AE	1D6AF	1D6B0	1D6B1	1D6B2	1D6B3	1D6B4	1D6B5	1D6B6	1D6B7	1D6B8	1D6BA	1D6BB	1D6BC	1D6BD	1D6BE	1D6BF	1D6C0	1D6C1
z	ι	ȷ	A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O	Π	P	Σ	T	Υ	Φ	X	Ψ	Ω	∇
1D6C2	1D6C3	1D6C4	1D6C5	1D6C6	1D6C7	1D6C8	1D6C9	1D6CA	1D6CB	1D6CC	1D6CD	1D6CE	1D6CF	1D6D0	1D6D1	1D6D2	1D6D3	1D6D4	1D6D5	1D6D6	1D6D7	1D6D8	1D6D9	1D6DA	1D6DB	1D6DC	1D6DD
α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	o	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	∂	ϵ	ϑ
1D6DE	1D6DF	1D6E0	1D6E1	1D6E2	1D6E3	1D6E4	1D6E5	1D6E6	1D6E7	1D6E8	1D6E9	1D6EA	1D6EB	1D6EC	1D6ED	1D6EE	1D6EF	1D6F0	1D6F1	1D6F2	1D6F3	1D6F4	1D6F5	1D6F6	1D6F7	1D6F8	1D6FA
ϰ	ϕ	ϱ	ϖ	A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O	Π	P	Σ	T	Υ	Φ	X	Ψ	Ω
1D6FC	1D6FD	1D6FE	1D6FF	1D700	1D701	1D702	1D703	1D704	1D705	1D706	1D707	1D708	1D709	1D70A	1D70B	1D70C	1D70D	1D70E	1D70F	1D710	1D711	1D712	1D713	1D714	1D715	1D716	1D717
α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	o	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	∂	ϵ	ϑ
1D718	1D719	1D71A	1D71B	1D71C	1D71D	1D71E	1D71F	1D720	1D721	1D722	1D723	1D724	1D725	1D726	1D727	1D728	1D729	1D72A	1D72B	1D72C	1D72E	1D72F	1D730	1D731	1D732	1D733	1D734
ϰ	ϕ	ϱ	ϖ	A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O	Π	P	Σ	T	Υ	Φ	X	Ψ	Ω

1D736	1D737	1D738	1D739	1D73A	1D73B	1D73C	1D73D	1D73E	1D73F	1D740	1D741	1D742	1D743	1D744	1D745	1D746	1D747	1D748	1D749	1D74A	1D74B	1D74C	1D74D	1D74E	1D74F	1D750	1D751
α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	o	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	∂	ϵ	ϑ

1D752	1D753	1D754	1D755	1D756	1D757	1D758	1D759	1D75A	1D75B	1D75C	1D75D	1D75E	1D75F	1D760	1D761	1D762	1D763	1D764	1D765	1D766	1D768	1D769	1D76A	1D76C	1D76D
ϰ	ϕ	ϱ	ϖ	A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O	Π	P	Σ	T	Υ	Φ	X	Ψ	Ω

1D76F	1D770	1D771	1D772	1D773	1D774	1D775	1D776	1D777	1D778	1D779	1D77A	1D77B	1D77C	1D77D	1D77E	1D77F	1D780	1D781	1D782	1D783	1D784	1D785	1D786	1D787	1D788	1D789	1D78A
∇	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	o	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω	∂	ϵ

1D78B	1D78C	1D78D	1D78E	1D78F	1D790	1D791	1D792	1D793	1D794	1D795	1D796	1D797	1D798	1D799	1D79A	1D79B	1D79C	1D79D	1D79E	1D79F	1D7A0	1D7A2	1D7A3	1D7A4	1D7A5	1D7A6	1D7A7
ϑ	ϰ	ϕ	ϱ	ϖ	A	B	Γ	Δ	E	Z	H	Θ	I	K	Λ	M	N	Ξ	O	Π	P	Σ	T	Υ	Φ	X	Ψ

1D7A8	1D7A9	1D7AA	1D7AB	1D7AC	1D7AD	1D7AE	1D7AF	1D7B0	1D7B1	1D7B2	1D7B3	1D7B4	1D7B5	1D7B6	1D7B7	1D7B8	1D7B9	1D7BA	1D7BB	1D7BC	1D7BD	1D7BE	1D7BF
Ω	∇	α	β	γ	δ	ε	ζ	η	θ	ι	κ	λ	μ	ν	ξ	o	π	ρ	ς	σ	τ	υ	φ	χ	ψ	ω

1D7C4	1D7C5	1D7C6	1D7C7	1D7C8	1D7C9	1D7CA	1D7CE	1D7CF	1D7D0	1D7D1	1D7D2	1D7D3	1D7D4	1D7D5	1D7D6	1D7D7	1D7E2	1D7E3	1D7E4	1D7E5	1D7E6	1D7E7	1D7E8	1D7E9	1D7EA	1D7EB	1D7EC
ϵ	ϑ	ϰ	ϕ	ϱ	ϖ	F	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	0

1D7ED	1D7EE	1D7EF	1D7F0	1D7F1	1D7F2	1D7F3	1D7F4	1D7F5	1D7F6	1D7F7	1D7F8	1D7F9	1D7FA	1D7FB	1D7FC	1D7FD	1D7FE	1D7FF							
1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9	□	★	o	ꓛ	ℏ	ƶ	∅	ℏ	ℓ

ℓ	ℓ	╱	╲	∣	‖	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v

w	x	y	z	◆	╱	╲	⊔	⊓	◁	▷	⋯	ℏ	Ē	Ē	−	↔	↤	↦	=	⌐	¬	⌐	¬	‖	⟷	∣	⌊

↱	↳	⌢	⌢	↣	⊖	★	⊈	≠	⊊	⊋	⊈	≩	≴	≵	≰	≱	≸	≹	≮	≯	⋦	⋧	＋	╫		

⊢	⊣	∾	⊕	⇒	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w

x	y	z	ı	ȷ	ɪ	ȷ	ı	ȷ	ı	ȷ	ı	ı	ȷ	ı	ȷ	ı	ȷ	ı	ꓕ	ꓘ	v	w	‖	↑		

⌐	¬	⌣	⌣	⇑	⇓	∣	‖	│	(	)	(	)	(	)	(	)	{	}	{	}	{	}	{	⟨	⟩	⟨

⟩	⟨	⟩	⟨	⟩	[	]	│	│	│	│	│	│	│	│	│	│	│	│	│	│	│	│	│	│	│	│

│	⟦	│	│	│	│	│	‖	‖	⌊	‖	‖	⌋	╱	╲	╱	╲	╱	│	╲	√	√	√	√			

$$a = b \qquad c \neq d$$

$$a = b \qquad c \neq d$$

$$a \otimes b \qquad c \oplus d$$

$$a \oplus b \qquad c \otimes d$$

$$A \leq B \qquad C \supseteq D$$

$$A \leq B \qquad C \supseteq D$$

$$P \sqsupseteq Q \qquad V \cup W$$

$$P \sqsupseteq Q \qquad V \cup W$$

Wednesday, July 27, 16

2232	2233	2234	2235	2236	2237	2238	2239	223A	223B	223C	223D	223E	223F	2240	2241	2242	2243	2244	2245	2246	2247	2248	2249	224A	224B	224C	224D
∲	∳	∴	∵	∶	∷	∸	∹	∺	∻	∼	∽	∾	∿	≀	≁	≂	≃	≄	≅	≆	≇	≈	≉	≊	≋	≌	≍

224E	224F	2250	2251	2252	2253	2254	2255	2256	2257	2258	2259	225A	225B	225C	225D	225E	225F	2260	2261	2262	2263	2264	2265	2266	2267	2268	2269
≎	≏	≐	≑	≒	≓	≔	≕	≖	≗	≘	≙	≚	≛	≜	≝	≞	≟	≠	≡	≢	≣	≤	≥	≦	≧	≨	≩

226A	226B	226C	226D	226E	226F	2270	2271	2272	2273	2274	2275	2276	2277	2278	2279	227A	227B	227C	227D	227E	227F	2280	2281	2282	2283	2284	2285
≪	≫	≬	≭	≮	≯	≰	≱	≲	≳	≴	≵	≶	≷	≸	≹	≺	≻	≼	≽	≾	≿	⊀	⊁	⊂	⊃	⊄	⊅

2286	2287	2288	2289	228A	228B	228C	228D	228E	228F	2290	2291	2292	2293	2294	2295	2296	2297	2298	2299	229A	229B	229C	229D	229E	229F	22A0	22A1
⊆	⊇	⊈	⊉	⊊	⊋	⊌	⊍	⊎	⊏	⊐	⊑	⊒	⊓	⊔	⊕	⊖	⊗	⊘	⊙	⊚	⊛	⊜	⊝	⊞	⊟	⊠	⊡

22A2	22A3	22A4	22A5	22A6	22A7	22A8	22A9	22AA	22AB	22AC	22AD	22AE	22AF	22B0	22B1	22B2	22B3	22B4	22B5	22B6	22B7	22B8	22B9	22BA	22BB	22BC	22BD
⊢	⊣	⊤	⊥	⊦	⊧	⊨	⊩	⊪	⊫	⊬	⊭	⊮	⊯	⊰	⊱	⊲	⊳	⊴	⊵	⊶	⊷	⊸	⊹	⊺	⊻	⊼	⊽

22BE	22BF	22C0	22C1	22C2	22C3	22C4	22C5	22C6	22C7	22C8	22C9	22CA	22CB	22CC	22CD	22CE	22CF	22D0	22D1	22D2	22D3	22D4	22D5	22D6	22D7	22D8	22D9
⊾	⊿	⋀	⋁	⋂	⋃	⋄	⋅	⋆	⋇	⋈	⋉	⋊	⋋	⋌	⋍	⋎	⋏	⋐	⋑	⋒	⋓	⋔	⋕	⋖	⋗	⋘	⋙

22DA	22DB	22DC	22DD	22DE	22DF	22E0	22E1	22E2	22E3	22E4	22E5	22E6	22E7	22E8	22E9	22EA	22EB	22EC	22ED	22EE	22EF	22F0	22F1	22F2	22F3	22F4	22F5
⋚	⋛	⋜	⋝	⋞	⋟	⋠	⋡	⋢	⋣	⋤	⋥	⋦	⋧	⋨	⋩	⋪	⋫	⋬	⋭	⋮	⋯	⋰	⋱	⋲	⋳	⋴	⋵

22F6	22F7	22F8	22F9	22FA	22FB	22FC	22FD	22FE	22FF	2306	2308	2309	230A	230B	2322	2323	24C8	25A0	25A1	25B2	25B3	25B6	25BD	25C0	25C6	25C8	25CF
⋶	⋷	⋸	⋹	⋺	⋻	⋼	⋽	⋾	⋿	⌆	⌈	⌉	⌊	⌋	⌢	⌣	Ⓢ	■	□	▲	△	▶	▽	◀	◆	◈	●

25E6	2660	2663	2665	2666	266D	266E	266F	2713	2720	27E6	27E7	27E8	27E9	27F0	27F1	27F2	27F3	27F4	27F5	27F6	27F7	27F8	27F9	27FA	27FB	27FC	27FD
◦	♠	♣	♥	♦	♭	♮	♯	✓	✠	⟦	⟧	⟨	⟩	⟰	⟱	⟲	⟳	⟴	⟵	⟶	⟷	⟸	⟹	⟺	⟻	⟼	⟽

27FE	27FF	2A7D	2A7E	2A85	2A86	2A88	2A8C	2AB7	2AB8	2ADE	2AE4	1D400	1D401	1D402	1D403	1D404	1D405	1D406	1D407	1D408	1D409	1D40A	1D40B	1D40C	1D40D	1D40E	1D40F
⟾	⟿	⩽	⩾	⪅	⪆	⪈	⪌	⪷	⪸	⫞	⫤	𝐀	𝐁	𝐂	𝐃	𝐄	𝐅	𝐆	𝐇	𝐈	𝐉	𝐊	𝐋	𝐌	𝐍	𝐎	𝐏

1D410	1D411	1D412	1D413	1D414	1D415	1D416	1D417	1D418	1D419	1D41A	1D41B	1D41C	1D41D	1D41E	1D41F	1D420	1D421	1D422	1D423	1D424	1D425	1D426	1D427	1D428	1D429	1D42A	1D42B
𝐐	𝐑	𝐒	𝐓	𝐔	𝐕	𝐖	𝐗	𝐘	𝐙	𝐚	𝐛	𝐜	𝐝	𝐞	𝐟	𝐠	𝐡	𝐢	𝐣	𝐤	𝐥	𝐦	𝐧	𝐨	𝐩	𝐪	𝐫

1D42C	1D42D	1D42E	1D42F	1D430	1D431	1D432	1D433	1D434	1D435	1D436	1D437	1D438	1D439	1D43A	1D43B	1D43C	1D43D	1D43E	1D43F	1D440	1D441	1D442	1D443	1D444	1D445	1D446	1D447
𝐬	𝐭	𝐮	𝐯	𝐰	𝐱	𝐲	𝐳	𝐴	𝐵	𝐶	𝐷	𝐸	𝐹	𝐺	𝐻	𝐼	𝐽	𝐾	𝐿	𝑀	𝑁	𝑂	𝑃	𝑄	𝑅	𝑆	𝑇

1D448	1D449	1D44A	1D44B	1D44C	1D44D	1D44E	1D44F	1D450	1D451	1D452	1D453	1D454	1D456	1D457	1D458	1D459	1D45A	1D45B	1D45C	1D45D	1D45E	1D45F	1D460	1D461	1D462	1D463	1D464
𝑈	𝑉	𝑊	𝑋	𝑌	𝑍	𝑎	𝑏	𝑐	𝑑	𝑒	𝑓	𝑔	𝑖	𝑗	𝑘	𝑙	𝑚	𝑛	𝑜	𝑝	𝑞	𝑟	𝑠	𝑡	𝑢	𝑣	𝑤

1D465	1D466	1D467	1D468	1D469	1D46A	1D46B	1D46C	1D46D	1D46E	1D46F	1D470	1D471	1D472	1D473	1D474	1D475	1D476	1D477	1D478	1D479	1D47A	1D47B	1D47C	1D47D	1D47E	1D47F	1D480
𝑥	𝑦	𝑧	𝑨	𝑩	𝑪	𝑫	𝑬	𝑭	𝑮	𝑯	𝑰	𝑱	𝑲	𝑳	𝑴	𝑵	𝑶	𝑷	𝑸	𝑹	𝑺	𝑻	𝑼	𝑽	𝑾	𝑿	𝒀

1D481	1D482	1D483	1D484	1D485	1D486	1D487	1D488	1D489	1D48A	1D48B	1D48C	1D48D	1D48E	1D48F	1D490	1D491	1D492	1D493	1D494	1D495	1D496	1D497	1D498	1D499	1D49A	1D49B	1D49C
𝒁	𝒂	𝒃	𝒄	𝒅	𝒆	𝒇	𝒈	𝒉	𝒊	𝒋	𝒌	𝒍	𝒎	𝒏	𝒐	𝒑	𝒒	𝒓	𝒔	𝒕	𝒖	𝒗	𝒘	𝒙	𝒚	𝒛	𝒜

1D49E	1D49F	1D4A2	1D4A5	1D4A6	1D4A9	1D4AA	1D4AB	1D4AC	1D4AE	1D4AF	1D4B0	1D4B1	1D4B2	1D4B3	1D4B4	1D4B5	1D4D0	1D4D1	1D4D2	1D4D3	1D4D4	1D4D5	1D4D6	1D4D7	1D4D8	1D4D9	1D4DA
𝒞	𝒟	𝒢	𝒥	𝒦	𝒩	𝒪	𝒫	𝒬	𝒮	𝒯	𝒰	𝒱	𝒲	𝒳	𝒴	𝒵	𝓐	𝓑	𝓒	𝓓	𝓔	𝓕	𝓖	𝓗	𝓘	𝓙	𝓚

1D4D8	1D4DC	1D4DD	1D4DE	1D4DF	1D4E0	1D4E1	1D4E2	1D4E3	1D4E4	1D4E5	1D4E6	1D4E7	1D4E8	1D4E9	1D538	1D539	1D53B	1D53C	1D53D	1D53E	1D540	1D541	1D542	1D543	1D544	1D546	1D54A
𝓛	𝓜	𝓝	𝓞	𝓟	𝓠	𝓡	𝓢	𝓣	𝓤	𝓥	𝓦	𝓧	𝓨	𝓩	𝔸	𝔹	ℂ	𝔻	𝔼	𝔽	𝔾	𝕀	𝕁	𝕂	𝕃	𝕆	𝕊

1D54B	1D54C	1D54D	1D54E	1D54F	1D550	1D55C	1D574	1D57D	1D5A0	1D5A1	1D5A2	1D5A3	1D5A4	1D5A5	1D5A6	1D5A7	1D5A8	1D5A9	1D5AA	1D5AB	1D5AC	1D5AD	1D5AE	1D5AF	1D5B0	1D5B1	1D5B2
𝕋	𝕌	𝕍	𝕎	𝕏	𝕐	𝕜	𝕴	𝕽	𝖠	𝖡	𝖢	𝖣	𝖤	𝖥	𝖦	𝖧	𝖨	𝖩	𝖪	𝖫	𝖬	𝖭	𝖮	𝖯	𝖰	𝖱	𝖲

1D5B3	1D5B4	1D5B5	1D5B6	1D5B7	1D5B8	1D5B9	1D5BA	1D5BB	1D5BC	1D5BD	1D5BE	1D5BF	1D5C0	1D5C1	1D5C2	1D5C3	1D5C4	1D5C5	1D5C6	1D5C7	1D5C8	1D5C9	1D5CA	1D5CB	1D5CC	1D5CD	1D5CE
𝖳	𝖴	𝖵	𝖶	𝖷	𝖸	𝖹	𝖺	𝖻	𝖼	𝖽	𝖾	𝖿	𝗀	𝗁	𝗂	𝗃	𝗄	𝗅	𝗆	𝗇	𝗈	𝗉	𝗊	𝗋	𝗌	𝗍	𝗎

1D5CF	1D5D0	1D5D1	1D5D2	1D5D3	1D5D4	1D5D5	1D5D6	1D5D7	1D5D8	1D5D9	1D5DA	1D5DB	1D5DC	1D5DD	1D5DE	1D5DF	1D5E0	1D5E1	1D5E2	1D5E3	1D5E4	1D5E5	1D5E6	1D5E7	1D5E8	1D5E9	1D5EA
𝗏	𝗐	𝗑	𝗒	𝗓	𝗔	𝗕	𝗖	𝗗	𝗘	𝗙	𝗚	𝗛	𝗜	𝗝	𝗞	𝗟	𝗠	𝗡	𝗢	𝗣	𝗤	𝗥	𝗦	𝗧	𝗨	𝗩

1D5EB	1D5EC	1D5ED	1D5EE	1D5EF	1D5F0	1D5F1	1D5F2	1D5F3	1D5F4	1D5F5	1D5F6	1D5F7	1D5F8	1D5F9	1D5FA	1D5FB	1D5FC	1D5FD	1D5FE	1D5FF	1D600	1D601	1D602	1D603	1D604	1D605	1D606
𝗫	𝗬	𝗭	𝗮	𝗯	𝗰	𝗱	𝗲	𝗳	𝗴	𝗵	𝗶	𝗷	𝗸	𝗹	𝗺	𝗻	𝗼	𝗽	𝗾	𝗿	𝘀	𝘁	𝘂	𝘃	𝘄	𝘅

1D607	1D608	1D609	1D60A	1D60B	1D60C	1D60D	1D60E	1D60F	1D610	1D611	1D612	1D613	1D614	1D615	1D616	1D617	1D618	1D619	1D61A	1D61B	1D61C	1D61D	1D61E	1D61F	1D620	1D621	1D622
𝘇	𝘈	𝘉	𝘊	𝘋	𝘌	𝘍	𝘎	𝘏	𝘐	𝘑	𝘒	𝘓	𝘔	𝘕	𝘖	𝘗	𝘘	𝘙	𝘚	𝘛	𝘜	𝘝	𝘞	𝘟	𝘠	𝘡	𝘢

1D623	1D624	1D625	1D626	1D627	1D628	1D629	1D62A	1D62B	1D62C	1D62D	1D62E	1D62F	1D630	1D631	1D632	1D633	1D634	1D635	1D636	1D637	1D638	1D639	1D63A	1D63B	1D63C	1D63D	1D63E
𝘣	𝘤	𝘥	𝘦	𝘧	𝘨	𝘩	𝘪	𝘫	𝘬	𝘭	𝘮	𝘯	𝘰	𝘱	𝘲	𝘳	𝘴	𝘵	𝘶	𝘷	𝘸	𝘹	𝘺	𝘻	𝘼	𝘽	𝘾

1D63F	1D640	1D641	1D642	1D643	1D644	1D645	1D646	1D647	1D648	1D649	1D64A	1D64B	1D64C	1D64D	1D64E	1D64F	1D650	1D651	1D652	1D653	1D654	1D655	1D656	1D657	1D658	1D659	1D65A
𝘿	𝙀	𝙁	𝙂	𝙃	𝙄	𝙅	𝙆	𝙇	𝙈	𝙉	𝙊	𝙋	𝙌	𝙍	𝙎	𝙏	𝙐	𝙑	𝙒	𝙓	𝙔	𝙕	𝙖	𝙗	𝙘	𝙙	𝙚

1D65B	1D65C	1D65D	1D65E	1D65F	1D660	1D661	1D662	1D663	1D664	1D665	1D666	1D667	1D668	1D669	1D66A	1D66B	1D66C	1D66D	1D66E	1D66F	1D670	1D671	1D672	1D673	1D674	1D675	1D676
𝙛	𝙜	𝙝	𝙞	𝙟	𝙠	𝙡	𝙢	𝙣	𝙤	𝙥	𝙦	𝙧	𝙨	𝙩	𝙪	𝙫	𝙬	𝙭	𝙮	𝙯	𝙰	𝙱	𝙲	𝙳	𝙴	𝙵	𝙶

1D677	1D678	1D679	1D67A	1D67B	1D67C	1D67D	1D67E	1D67F	1D680	1D681	1D682	1D683	1D684	1D685	1D686	1D687	1D688	1D689	1D68A	1D68B	1D68C	1D68D	1D68E	1D68F	1D690	1D691	1D692
𝙷	𝙸	𝙹	𝙺	𝙻	𝙼	𝙽	𝙾	𝙿	𝚀	𝚁	𝚂	𝚃	𝚄	𝚅	𝚆	𝚇	𝚈	𝚉	𝚊	𝚋	𝚌	𝚍	𝚎	𝚏	𝚐	𝚑	𝚒

1D693	1D694	1D695	1D696	1D697	1D698	1D699	1D69A	1D69B	1D69C	1D69D	1D69E	1D69F	1D6A0	1D6A1	1D6A2	1D6A3	1D6A4	1D6A5	1D6A8	1D6A9	1D6AA	1D6AB	1D6AC	1D6AD	1D6AE	1D6AF	1D6B0
𝚓	𝚔	𝚕	𝚖	𝚗	𝚘	𝚙	𝚚	𝚛	𝚜	𝚝	𝚞	𝚟	𝚠	𝚡	𝚢	𝚣	𝚤	𝚥	𝚨	𝚩	𝚪	𝚫	𝚬	𝚭	𝚮	𝚯

1D6B1	1D6B2	1D6B3	1D6B4	1D6B5	1D6B6	1D6B7	1D6B8	1D6BA	1D6BB	1D6BC	1D6BD	1D6BE	1D6BF	1D6C0	1D6C1	1D6C2	1D6C3	1D6C4	1D6C5	1D6C6	1D6C7	1D6C8	1D6C9	1D6CA	1D6CB	1D6CC	1D6CD
𝚱	𝚲	𝚳	𝚴	𝚵	𝚶	𝚷	𝚺	𝚻	𝚼	𝚽	𝚾	𝚿	𝛀	𝛁	𝛂	𝛃	𝛄	𝛅	𝛆	𝛇	𝛈	𝛉	𝛊	𝛋	𝛌	𝛍

1D6CE	1D6CF	1D6D0	1D6D1	1D6D2	1D6D3	1D6D4	1D6D5	1D6D6	1D6D7	1D6D8	1D6D9	1D6DA	1D6DB	1D6DC	1D6DD	1D6DE	1D6DF	1D6E0	1D6E1	1D6E2	1D6E3	1D6E4	1D6E5	1D6E6	1D6E7	1D6E8	1D6E9
𝛎	𝛏	𝛐	𝛑	𝛒	𝛓	𝛔	𝛕	𝛖	𝛗	𝛘	𝛙	𝛚	𝛛	𝛜	𝛝	𝛞	𝛟	𝛠	𝛡	𝛢	𝛣	𝛤	𝛥	𝛦	𝛧	𝛨	𝛩

1D6EA	1D6EB	1D6EC	1D6ED	1D6EE	1D6EF	1D6F0	1D6F1	1D6F2	1D6F4	1D6F5	1D6F6	1D6F7	1D6F8	1D6F9	1D6FA	1D6FB	1D6FC	1D6FD	1D6FE	1D6FF	1D700	1D701	1D702	1D703	1D704	1D705	1D706
𝛪	𝛫	𝛬	𝛭	𝛮	𝛯	𝛰	𝛱	𝛴	𝛵	𝛶	𝛷	𝛸	𝛹	𝛺	𝛻	𝛼	𝛽	𝛾	𝛿	𝜀	𝜁	𝜂	𝜃	𝜄	𝜅	𝜆

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Lucida Calligraphy Italic

Art begins where geometry ends, and imparts to letters a character — **Thin**

Art begins where geometry ends, and imparts to letters a character — **ExtraLite**

Art begins where geometry ends, and imparts to letters a characte — **Lite**

Art begins where geometry ends, and imparts to letters a characte — **Book**

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Art begins where geometry ends, and imparts to letters a chara — **Dark**

Art begins where geometry ends, and imparts to letters a char — **ExtraDark**

Art begins where geometry ends, and imparts to letters a char — **Bold**

Art begins where geometry ends, and imparts to letters a ch — **UltraBold**

Art begins where geometry ends, and imparts to letters a c — **Black**

Art begins where geometry ends, and imparts to letters a — **ExtraBlack**

Art begins where geometry ends, and imparts to letters — **UltraBlack**
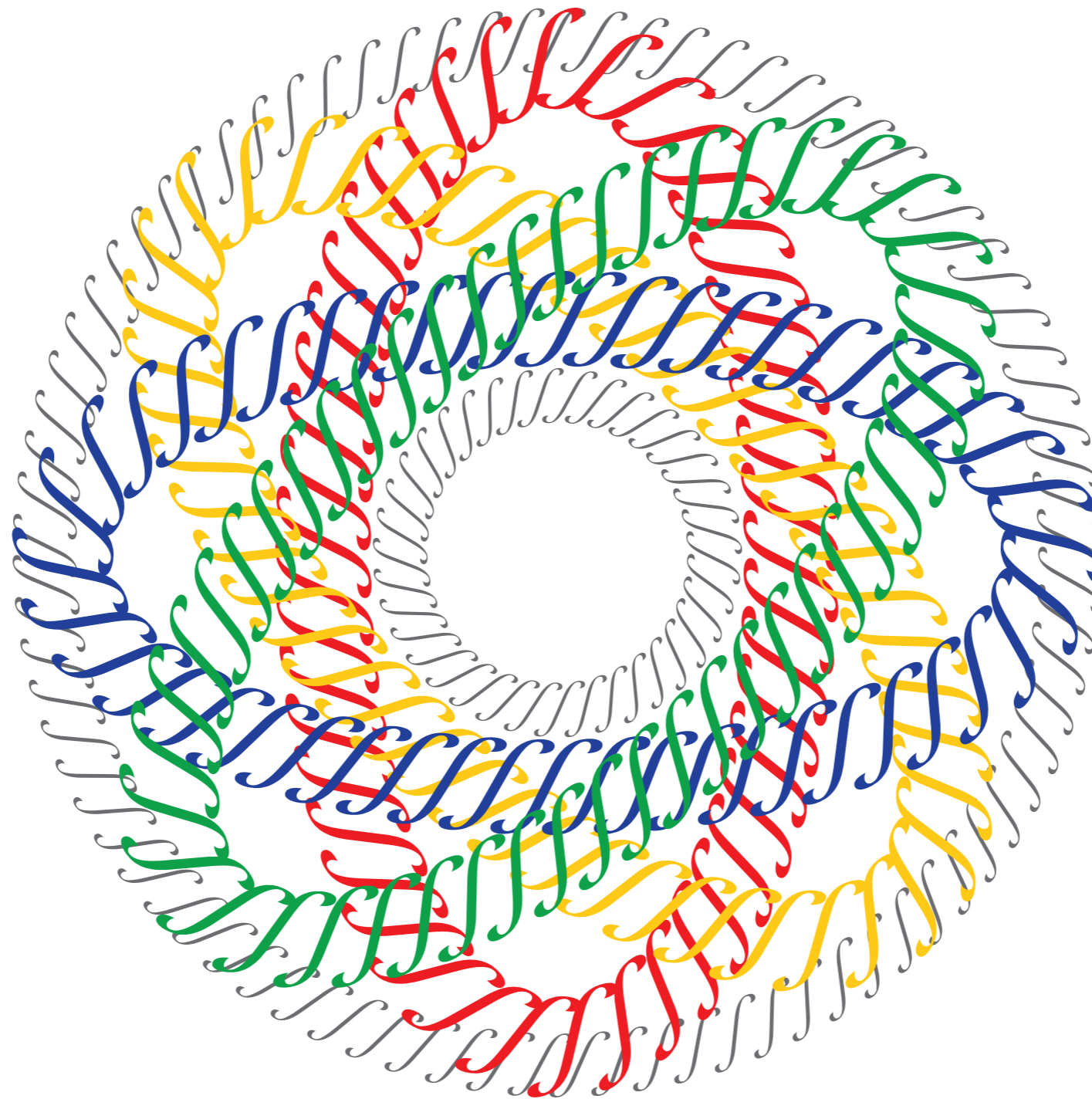
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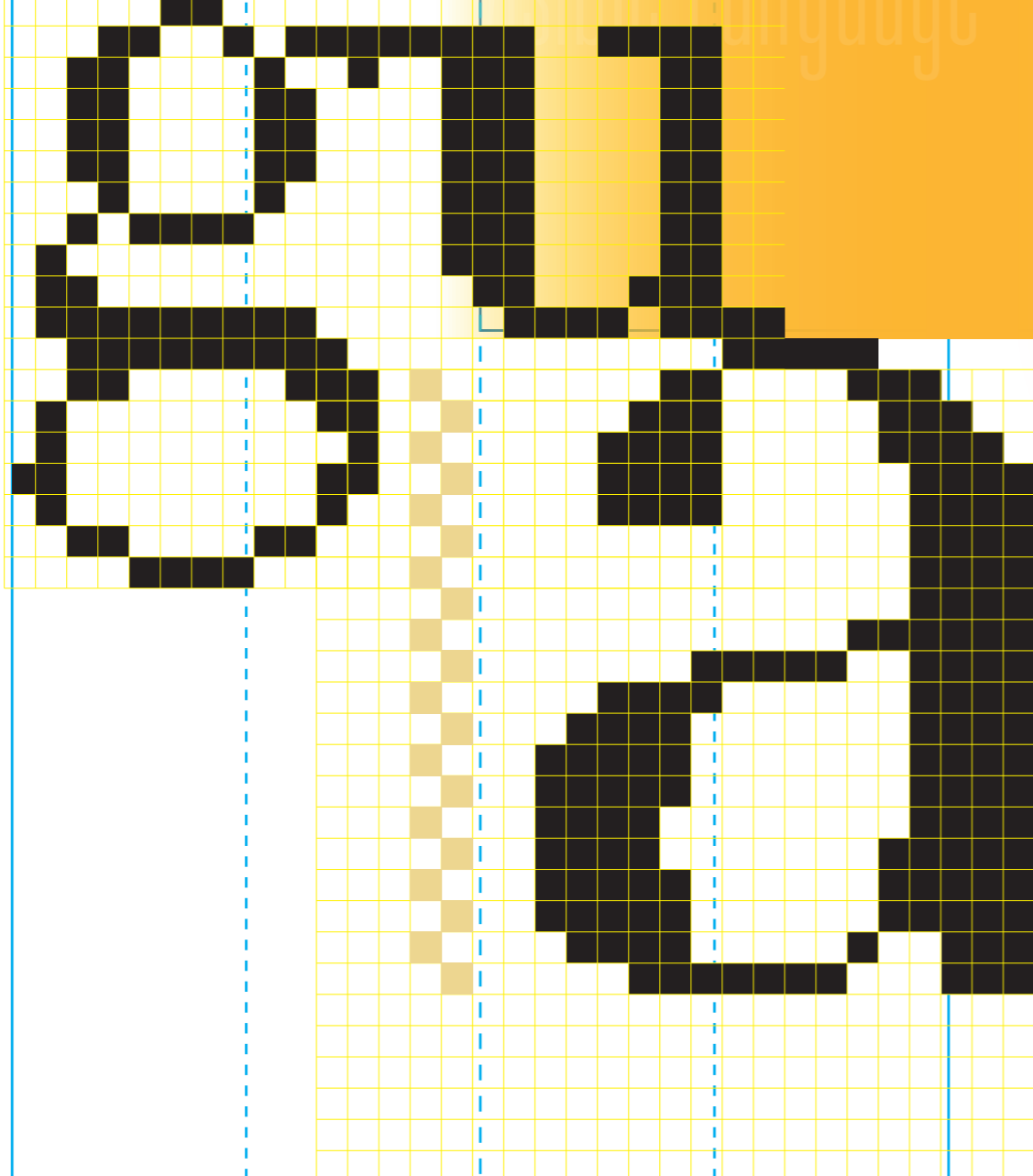NOPQRSTUVWXYZ
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The mathematician's patterns,
like the painter's or the poet's, must be beautiful;
the ideas, like the colours or the words,
must fit together in a harmonious way.

G. H. Hardy

Lan

Visible Language

Visible Language

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the journal of
visual communication
research

special issue:
reflecting of 50 years of Typography

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Charles Bigelow and Kevin Larson
Guest Editors

HEADS AND SUBHEADS

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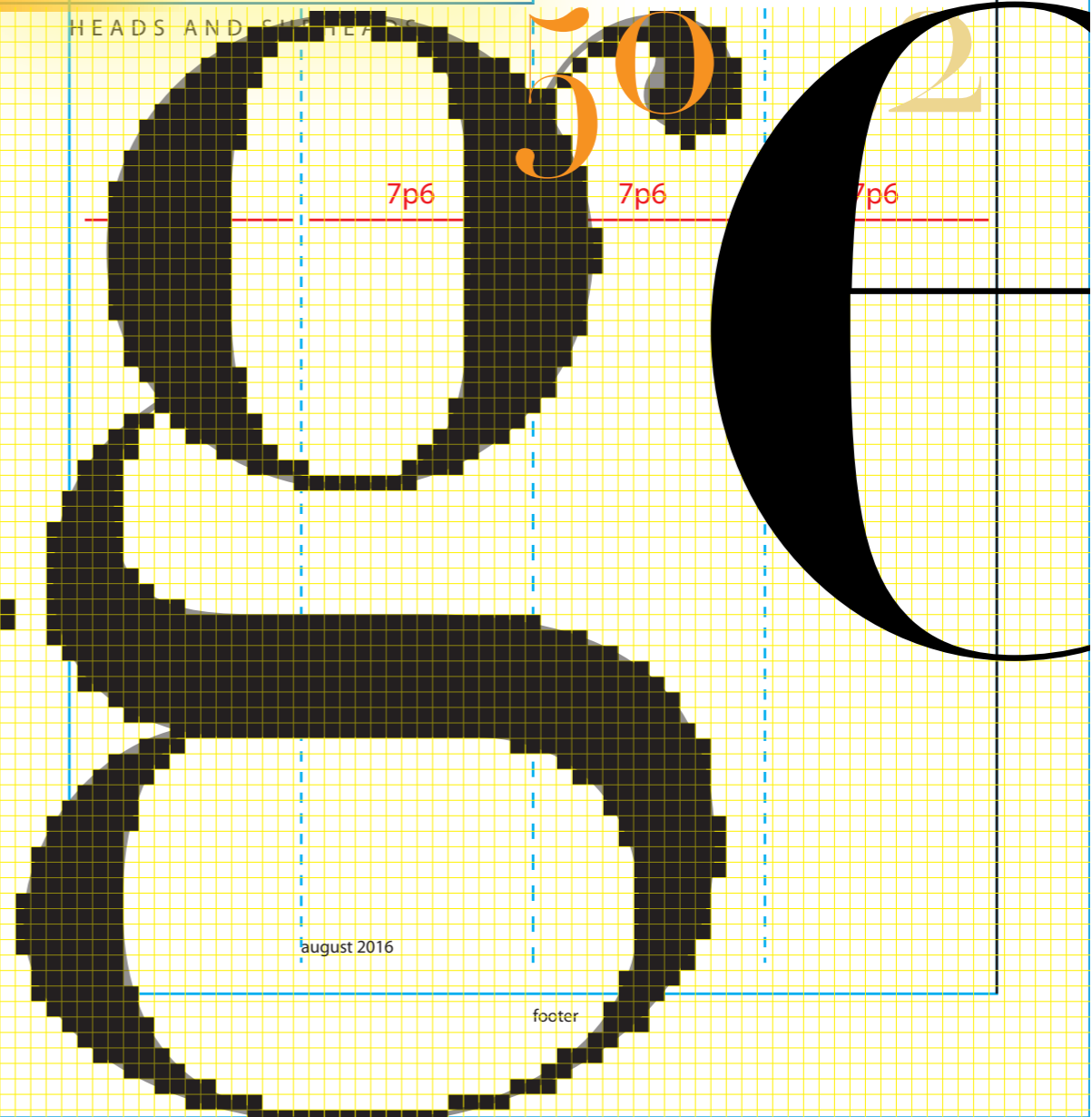
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Communication of Mathematics with TEX

user input:

$$\sqrt{b\texttt{\^{}}2}$$

TEX output:

$$\sqrt{b^2}$$

Barbara Beeton
Richard Palais

Abstract

Mathematics publication has changed radically over the past 50 years, for both authors and publishers. What once required a skilled compositor to produce can now be accomplished, with the aid of computers and software, directly by authors. One key component of this change is the TEX typesetting program. This software, designed by a mathematically discriminating computer scientist and made freely available, is now in operation on nearly every computer system in common use.

Wednesday, July 27, 16