

## Directory of the Canons.

Synopsis for all the directories of quadratic, cubic, and biquadratic equations are to be recorded together with the analytic canons for their mode of operation. In which the kind of canon are described in four parts, in order that the operation of the canon responds in a unique manner to the analytic task; the first part of the schematic description for the example is seen to be divided into two parts  $A$  and  $Ab$ , with  $A$  for the first digit of the root to be extracted and  $Ab$  for the part to be subtracted. The following part is divided into the two parts  $B$  and  $Bc$ ;  $B$  for the divisor, and  $Bc$  for the part to be taken away.

Aequationum Quadraticorum, Cubicorum, & Biquadraticarum, cum canonibus suis operis analytici directoriis cuique adscriptis integra & ordinata synopsis. In qua species canonicae, ut operi analytico distinete respondeant, quadripartito descriptae sunt, antecedentium schematismorum exemplo, videlicet duea primae partes  $A$  &  $Ab$  pro primae radices singularis eductione  $A$  pro divisore  $Ab$  pro ablatitio; & duea secundae partes  $B$  &  $Bc$  pro secundariis reliquis,  $B$  pro divisore,  $Bc$  pro ablatitio.

<i>4 different cases of quadratic canons :</i>	<i>14 different cases of cubic canons :</i>	
Prima.	Prima.	
$\begin{array}{r} aa \\ \hline A . . . . b \\ Ab . . . bb \end{array}$ $\begin{array}{r} B . . . . 2.b \\ Bc . . . . \left\{ \begin{array}{l} 2.bc \\ .. cc \end{array} \right. \end{array}$	$\begin{array}{r} ff \\ \hline \end{array}$ $\begin{array}{r} 2. \\ \hline \end{array}$	$\begin{array}{r} aaa \\ \hline A . . . . bb \\ Ab . . . bbb \\ Bc \left\{ \begin{array}{l} 3.bb \\ 3.b \\ dc \\ 3. bbc \\ 3.bcc \\ ccc \end{array} \right. \end{array}$
$\begin{array}{r} aa + da \\ \hline \end{array}$ $\begin{array}{r} A \left\{ \begin{array}{l} d \\ b \end{array} \right. \\ \hline Ab \left\{ \begin{array}{l} db \\ bb \end{array} \right. \end{array}$	$\begin{array}{r} ff \\ \hline \end{array}$	$\begin{array}{r} ggg. \\ \hline \end{array}$
$\begin{array}{r} B \left\{ \begin{array}{l} d \\ 2.b \end{array} \right. \\ \hline Bc \left\{ \begin{array}{l} dc \\ 2. bc \\ .. cc \end{array} \right. \end{array}$	$\begin{array}{r} 2. \\ \hline \end{array}$	$\begin{array}{r} 2. \\ \hline \end{array}$
$\begin{array}{r} aa - da \\ \hline \end{array}$ $\begin{array}{r} A \left\{ \begin{array}{l} -d \\ b \end{array} \right. \\ \hline Ab \left\{ \begin{array}{l} -db \\ bb \end{array} \right. \end{array}$	$\begin{array}{r} ff \\ \hline \end{array}$	$\begin{array}{r} aaa + ffa \\ \hline \end{array}$
$\begin{array}{r} B \left\{ \begin{array}{l} -d \\ 2.b \\ -dc \end{array} \right. \\ \hline Bc \left\{ \begin{array}{l} 2. bc \\ .. cc \end{array} \right. \end{array}$	$\begin{array}{r} ggg. \\ \hline \end{array}$	$\begin{array}{r} ff \\ \hline \end{array}$
$\begin{array}{r} 3. \\ \hline \end{array}$	$\begin{array}{r} B . . . . 3.bb \\ B . . . 3.b \\ B . . . . 3.b \\ Bc \left\{ \begin{array}{l} 3.bbc \\ 3.bcc \\ .. ccc \end{array} \right. \end{array}$	$\begin{array}{r} B . . . . 3.bb \\ B . . . 3.b \\ B . . . . 3.b \\ Bc \left\{ \begin{array}{l} 3.bbc \\ 3.bcc \\ .. ccc \end{array} \right. \end{array}$
$\begin{array}{r} 4. \\ \hline \end{array}$	$\begin{array}{r} aaa - ffa \\ \hline \end{array}$	$\begin{array}{r} 3. \\ \hline \end{array}$
$\begin{array}{r} -aa + da \\ \hline \end{array}$ $\begin{array}{r} A \left\{ \begin{array}{l} ...d \\ -b \end{array} \right. \\ \hline Ab \left\{ \begin{array}{l} ...db \\ -bb \end{array} \right. \end{array}$	$\begin{array}{r} ff \\ \hline \end{array}$	$\begin{array}{r} ggg. \\ \hline \end{array}$
$\begin{array}{r} B \left\{ \begin{array}{l} ...d \\ -2.b \\ -dc \end{array} \right. \\ \hline Bc \left\{ \begin{array}{l} -2. bc \\ -.. cc \end{array} \right. \end{array}$	$\begin{array}{r} B . . . . -ff \\ B . . . . 3.bb \\ B . . . 3.b \\ B . . . . -ff \\ Bc \left\{ \begin{array}{l} 3.bcc \\ 3.bcc \\ .. ccc \end{array} \right. \end{array}$	$\begin{array}{r} -ff \\ \hline \end{array}$

4.	$-aaa + ffa \underline{\hspace{1cm}}$ $\begin{array}{l} A \\ Ab \\ \hline \end{array} \left\{ \begin{array}{l} ff \\ -bb \\ ...ffb \\ -bbb \end{array} \right.$	$ggg.$ $B \left\{ \begin{array}{l} .ff \\ .-3.bb \\ -3.b \\ .ffc \\ -3.bcc \\ -3.bcc \\ -ccc \end{array} \right.$	$aaa + da + ffa \underline{\hspace{1cm}}$ $\begin{array}{l} A \\ Ab \\ \hline \end{array} \left\{ \begin{array}{l} ff \\ d \\ db \\ ffb \\ dbb \\ .bbb \end{array} \right.$	$ggg.$ $B \left\{ \begin{array}{l} .ff \\ .d \\ 2.db \\ b.b \\ 3.b \\ .ffc \\ .dcc \\ 2.dcb \\ 3.bbc \\ 3.bcc \\ ..ccc \end{array} \right.$
5.	$aaa + daa \underline{\hspace{1cm}}$ $\begin{array}{l} A \\ Ab \\ \hline \end{array} \left\{ \begin{array}{l} d \\ bb \\ ...dbb \\ bbb \end{array} \right.$	$ggg.$ $B \left\{ \begin{array}{l} .d \\ 2.db \\ 3.bb \\ 3.b \\ .bcc \\ 2dbc \\ 3.bbc \\ 3.bcc \\ ...ccc \end{array} \right.$	$aaa + da - ffa \underline{\hspace{1cm}}$ $\begin{array}{l} A \\ Ab \\ \hline \end{array} \left\{ \begin{array}{l} -ff \\ d \\ bb \\ ffb \\ dbb \\ .bbb \end{array} \right.$	$ggg..$ $B \left\{ \begin{array}{l} .-ff \\ .d \\ 2.db \\ b.b \\ 3.b \\ .-ffc \\ .dcc \\ 2.dcb \\ 3.bbc \\ 3.bcc \\ ..ccc \end{array} \right.$
6.	$aaa - daa \underline{\hspace{1cm}}$ $\begin{array}{l} A \\ Ab \\ \hline \end{array} \left\{ \begin{array}{l} -.d \\ bb \\ -dbb \\ .bbb \end{array} \right.$	$ggg.$ $B \left\{ \begin{array}{l} -.d \\ 2.db \\ 3.bb \\ 3.b \\ .bcc \\ 2dbc \\ 3.bbc \\ 3.bcc \\ ...ccc \end{array} \right.$	$-aaa - da + ffa \underline{\hspace{1cm}}$ $\begin{array}{l} A \\ Ab \\ \hline \end{array} \left\{ \begin{array}{l} ff \\ -d \\ -bb \\ ffb \\ -dbb \\ .-bbb \end{array} \right.$	$ggg..$ $B \left\{ \begin{array}{l} .ff \\ -d \\ -2.db \\ -b.b \\ -3.b \\ .ffc \\ .-dcc \\ -2.dcb \\ -3.bbc \\ -3.bcc \\ .-ccc \end{array} \right.$
7.	$-aaa + daa \underline{\hspace{1cm}}$ $\begin{array}{l} A \\ Ab \\ \hline \end{array} \left\{ \begin{array}{l} .d \\ bb \\ -dbb \\ .bbb \end{array} \right.$	$ggg.$ $B \left\{ \begin{array}{l} .d \\ 2.db \\ -3.bb \\ -3.b \\ .bcc \\ 2dbc \\ -3.bbc \\ -3.bcc \\ ...ccc \end{array} \right.$		

<b>11.</b> $\begin{array}{r} aaa - daa + ffa \\ \hline \end{array}$	$\begin{array}{r} ggg. \\ \hline \end{array}$	<b>14.</b> $\begin{array}{r} -aaa + daa + ffa \\ \hline \end{array}$	$\begin{array}{r} ggg. \\ \hline \end{array}$
$\begin{array}{l} A \left\{ \begin{array}{l} .ff \\ -d \\ bb \\ \hline ..fbb \\ Ab \left\{ \begin{array}{l} -dbb \\ bbb \end{array} \right. \end{array} \right. \\ \hline \end{array}$	$\begin{array}{l} B \left\{ \begin{array}{l} .ff \\ .-d \\ -2.db \\ 3.bb \\ 3.b \\ \hline Bc \left\{ \begin{array}{l} .ffc \\ -.dcc \\ 3.bbc \\ 3.bcc \\ -ccc \end{array} \right. \end{array} \right. \\ \hline \end{array}$	$\begin{array}{l} A \left\{ \begin{array}{l} .ff \\ d \\ -bb \\ \hline fbb \\ Ab \left\{ \begin{array}{l} dbb \\ -bbb \end{array} \right. \end{array} \right. \\ \hline \end{array}$	$\begin{array}{l} B \left\{ \begin{array}{l} ff \\ d \\ 2.db \\ -3.bb \\ -3.b \\ \hline Bg \left\{ \begin{array}{l} ffc \\ dcc \\ 2dbc \\ -3.bbc \\ -3.bcc \\ -ccc \end{array} \right. \end{array} \right. \\ \hline \end{array}$
<b>12.</b> $\begin{array}{r} -aaa + daa - ffa \\ \hline \end{array}$	$\begin{array}{r} ggg. \\ \hline \end{array}$	<i>46 different cases of quartic canons :</i> <i>Prima.</i> $\begin{array}{r} aaaa \\ \hline \end{array}$	$\begin{array}{r} hhhh. \\ \hline \end{array}$
$\begin{array}{l} A \left\{ \begin{array}{l} -ff \\ .d \\ -bb \\ \hline -fbb \\ Ab \left\{ \begin{array}{l} ...d \\ -bb \end{array} \right. \end{array} \right. \\ \hline \end{array}$	$\begin{array}{l} B \left\{ \begin{array}{l} .-ff \\ ..d \\ 2.db \\ -3.bb \\ -3.b \\ \hline Bc \left\{ \begin{array}{l} ...ffc \\ dcc \\ 2dbc \\ -3.bbc \\ -3.bcc \\ -.ccc \end{array} \right. \end{array} \right. \\ \hline \end{array}$	$\begin{array}{l} A \dots bbb \\ Ab \dots bbbb \\ \hline \end{array}$	$\begin{array}{l} B \left\{ \begin{array}{l} 4.bbb \\ 6.bb \\ 4.b \\ \hline Bc \left\{ \begin{array}{l} 4.bbbc \\ 6.bbcc \\ 4.bccc \\ cccc \end{array} \right. \end{array} \right. \\ \hline \end{array}$
<b>13.</b> $\begin{array}{r} aaa - daa - ffa \\ \hline \end{array}$	$\begin{array}{r} ggg \\ \hline \end{array}$	<b>2.</b> $\begin{array}{r} aaaa + ggga \\ \hline \end{array}$	$\begin{array}{r} hhhh. \\ \hline \end{array}$
$\begin{array}{l} A \left\{ \begin{array}{l} -ff \\ -d \\ bb \\ \hline -fbb \\ Ab \left\{ \begin{array}{l} -dbb \\ bbb \end{array} \right. \end{array} \right. \\ \hline \end{array}$	$\begin{array}{l} B \left\{ \begin{array}{l} -ff \\ -d \\ -2.db \\ 3.bb \\ 3.b \\ \hline Bc \left\{ \begin{array}{l} -ffc \\ -dcc \\ -2dbc \\ 3.bbc \\ 3.bcc \\ ...ccc \end{array} \right. \end{array} \right. \\ \hline \end{array}$	$\begin{array}{l} A \left\{ \begin{array}{l} ggg \\ bbb \\ gggb \\ \hline Ab \left\{ \begin{array}{l} bbbb \end{array} \right. \end{array} \right. \\ \hline \end{array}$	$\begin{array}{l} B \left\{ \begin{array}{l} .ggg \\ ..4.bbb \\ 6.bb \\ 4.b \\ \hline Bc \left\{ \begin{array}{l} .gggc \\ 4.bbbc \\ 6.bbcc \\ 4.bcc \\ ..cccc \end{array} \right. \end{array} \right. \\ \hline \end{array}$

3.	aaaa — gggaa      hhhh.	7.	—aaaa + ffaa      hhhh.
	$A . \left\{ \begin{array}{l} \overline{-g g g} \\ \underline{.. b b b} \end{array} \right.$ $Ab \left\{ \begin{array}{l} \overline{-g g g b} \\ \underline{b b b b} \end{array} \right.$	$B . \left\{ \begin{array}{l} \overline{-g g g} \\ \underline{.. 4.b b b} \\ \overline{6.b b} \\ \underline{4.b} \end{array} \right.$ $Bc \left\{ \begin{array}{l} \overline{-g g g c} \\ \underline{4.. b b b c} \\ \overline{6.b b c c} \\ \underline{4.b c c c} \\ \overline{.. c c c c} \end{array} \right.$	$A \left\{ \begin{array}{l} \overline{f f} \\ \underline{-b b b} \end{array} \right.$ $Ab \left\{ \begin{array}{l} \overline{f f} \\ \underline{-b b b b} \end{array} \right.$ $B \left\{ \begin{array}{l} \overline{.. f f} \\ \underline{. 2.f f b} \\ \overline{-4.b b b} \\ \underline{-6.b b} \\ \overline{-4.b} \end{array} \right.$ $Bc \left\{ \begin{array}{l} \overline{f f c c} \\ \underline{2.f f b c} \\ \overline{-4.b b b c} \\ \underline{-6.b b c c} \\ \overline{-4.b c c c} \\ \underline{-c c c c} \end{array} \right.$
4.	—aaaa + gggaa      hhhh.	8.	aaaa + daaa      hhhh.
	$A \left\{ \begin{array}{l} \overline{g g g} \\ \underline{.. b b b} \end{array} \right.$ $Ab \left\{ \begin{array}{l} \overline{-g g g b} \\ \underline{b b b b} \end{array} \right.$	$B . \left\{ \begin{array}{l} \overline{g g g} \\ \underline{.. 4.b b b} \\ \overline{-6.b b} \\ \underline{-4.b} \end{array} \right.$ $Bc \left\{ \begin{array}{l} \overline{.. g g g c} \\ \underline{-4.. b b b c} \\ \overline{-6.b b c c} \\ \underline{-4.b c c c} \\ \overline{-c c c c} \end{array} \right.$	$A \left\{ \begin{array}{l} \overline{d} \\ \underline{b b b} \end{array} \right.$ $Ab \left\{ \begin{array}{l} \overline{d b b b} \\ \underline{b b b b} \end{array} \right.$ $B \left\{ \begin{array}{l} \overline{.. d} \\ \underline{. 3.d b} \\ \overline{3.d b b} \\ \underline{4.b b b} \\ \overline{6.b b} \\ \underline{4.b} \end{array} \right.$ $Bc \left\{ \begin{array}{l} \overline{. d c c c} \\ \underline{3.d b c c} \\ \overline{4.b b b c} \\ \underline{6.b b c c} \\ \overline{4.b c c c} \\ \underline{-c c c c} \end{array} \right.$
5.	aaaa + ffaa      hhhh.	9	aaaa — daaa      hhhh.
	$A \left\{ \begin{array}{l} \overline{f f} \\ \underline{b b b} \end{array} \right.$ $Ab \left\{ \begin{array}{l} \overline{g b b b} \\ \underline{. b b b b} \end{array} \right.$	$B . \left\{ \begin{array}{l} \overline{. f f} \\ \underline{. 2.f f b} \\ \overline{4.b b b} \\ \underline{6.b b} \\ \overline{4.b} \end{array} \right.$ $Bc \left\{ \begin{array}{l} \overline{.. f f c c} \\ \underline{2.f f b c} \\ \overline{4.b b b c} \\ \underline{6.b b c c} \\ \overline{4.b c c c} \\ \underline{c c c c} \end{array} \right.$	$A \left\{ \begin{array}{l} \overline{-d} \\ \underline{b b b} \end{array} \right.$ $Ab \left\{ \begin{array}{l} \overline{-d b b b} \\ \underline{b b b b} \end{array} \right.$ $B \left\{ \begin{array}{l} \overline{-d} \\ \underline{3.d b} \\ \overline{-3.d b b} \\ \underline{4.b b b} \\ \overline{6.b b} \\ \underline{4.b} \end{array} \right.$ $Bc \left\{ \begin{array}{l} \overline{-d c c c} \\ \underline{3.d b c c} \\ \overline{-4.b b b c} \\ \underline{6.b b c c} \\ \overline{4.b c c c} \\ \underline{c c c c} \end{array} \right.$
6.	aaaa — ffaa      hhhh.	10	—aaaa + daaa      hhhh.
	$A \left\{ \begin{array}{l} \overline{-f f} \\ \underline{b b b} \end{array} \right.$ $Ab \left\{ \begin{array}{l} \overline{-g b b b} \\ \underline{. b b b b} \end{array} \right.$	$B . \left\{ \begin{array}{l} \overline{-f f} \\ \underline{. 2.f f b} \\ \overline{4.b b b} \\ \underline{6.b b} \\ \overline{4.b} \end{array} \right.$ $Bc \left\{ \begin{array}{l} \overline{-f f c c} \\ \underline{-2.f f b c} \\ \overline{4.b b b c} \\ \underline{6.b b c c} \\ \overline{4.b c c c} \\ \underline{c c c c} \end{array} \right.$	$A \left\{ \begin{array}{l} \overline{d} \\ \underline{-b b b} \end{array} \right.$ $Ab \left\{ \begin{array}{l} \overline{d b b b} \\ \underline{-b b b b} \end{array} \right.$ $B \left\{ \begin{array}{l} \overline{.. . d} \\ \underline{.. 3.d b} \\ \overline{.. 3.d b b} \\ \underline{-4.b b b} \\ \overline{-6.b b} \\ \underline{-4.b} \end{array} \right.$ $Bc \left\{ \begin{array}{l} \overline{.. . d c c c} \\ \underline{.. 3.d b c c} \\ \overline{.. 4.b b b c} \\ \underline{-6.b b c c} \\ \overline{-4.b c c c} \\ \underline{-c c c c} \end{array} \right.$

<p><b>11</b></p> <p><i>aaaa + ffcc + gggc</i>    <u>hhhh.</u></p> <p><i>A . {</i>    <i>gff</i>  <i>Ab {</i>    <i>ff</i>  <i>..bbb</i>  <i>ggb</i>  <i>ffbb</i>  <i>hhbb</i>  <u><i>hhbb</i></u></p> <p><i>B . {</i>    <i>ggf</i>  <i>..2ffb</i>  <i>4.bbb</i>  <i>6.bb</i>  <i>4.b</i></p> <p><i>Bc {</i>    <i>..ggc</i>  <i>ffcc</i>  <i>2ffb</i>  <i>4.bbbc</i>  <i>6.bbcc</i>  <i>4.bccc</i>  <i>..cccc</i></p>	<p><b>14</b></p> <p><i>aaaa - ffcc + gggc</i>    <u>hhhh.</u></p> <p><i>A . {</i>    <i>gff</i>  <i>Ab {</i>    <i>-ff</i>  <i>bbb</i>  <i>ggb</i>  <i>-ffbb</i>  <i>bbbb</i></p> <p><i>B . {</i>    <i>..ggc</i>  <i>-ffcc</i>  <i>-2ffb</i>  <i>4.bbb</i>  <i>6.bb</i>  <i>4.b</i></p> <p><i>Bc {</i>    <i>..ggc</i>  <i>-ffcc</i>  <i>-2ffb</i>  <i>4.bbbc</i>  <i>6.bbcc</i>  <i>4.bccc</i>  <i>cccc</i></p>
<p><b>12</b></p> <p><i>aaaa + ffcc - gggc</i>    <u>hhhh..</u></p> <p><i>A . {</i>    <i>-gff</i>  <i>Ab {</i>    <i>ff</i>  <i>..bbb</i>  <i>-ggb</i>  <i>ffbb</i>  <i>hhbb</i>  <u><i>hhbb</i></u></p> <p><i>B . {</i>    <i>..-ggf</i>  <i>2ffb</i>  <i>4.bbb</i>  <i>6.bb</i>  <i>4.b</i></p> <p><i>Bc {</i>    <i>..-ggc</i>  <i>ffcc</i>  <i>2ffb</i>  <i>4.bbbc</i>  <i>6.bbcc</i>  <i>4.bccc</i>  <i>..cccc</i></p>	<p><b>15</b></p> <p><i>-aaaa + ffcc - gggc</i>    <u>hhhh.</u></p> <p><i>A {</i>    <i>. -gff</i>  <i>B {</i>    <i>ff</i>  <i>..bbb</i></p> <p><i>Ab {</i>    <i>-ggb</i>  <i>ffbb</i>  <i>-bbb</i></p> <p><i>B . {</i>    <i>..-ggc</i>  <i>ffcc</i>  <i>2ffb</i>  <i>4.bbb</i>  <i>6.bb</i>  <i>4.b</i></p> <p><i>Bc {</i>    <i>..-ggc</i>  <i>ffcc</i>  <i>2ffb</i>  <i>4.bbbc</i>  <i>6.bbcc</i>  <i>4.bccc</i>  <i>-cccc</i></p>
<p><b>13</b></p> <p><i>-aaaa - ffcc + gggc</i>    <u>hhhh.</u></p> <p><i>A . {</i>    <i>-gff</i>  <i>Ab {</i>    <i>-ff</i>  <i>..bbb</i>  <i>-ggb</i>  <i>-ffbb</i>  <u><i>hhbb</i></u></p> <p><i>B {</i>    <i>..-ggf</i>  <i>-2ffb</i>  <i>..4.bbb</i>  <i>-6.bb</i>  <i>-4.b</i></p> <p><i>Bc {</i>    <i>..-ggc</i>  <i>-ffcc</i>  <i>-2ffb</i>  <i>-4.bbbc</i>  <i>-6.bbcc</i>  <i>-4.bccc</i>  <i>..-cccc</i></p>	<p><b>16</b></p> <p><i>aaaa - ffcc - gggc</i>    <u>hhhh.</u></p> <p><i>A . {</i>    <i>-gff</i>  <i>Ab {</i>    <i>-ff</i>  <i>bbb</i>  <i>-ggb</i>  <i>-ffbb</i>  <i>bbbb</i></p> <p><i>B {</i>    <i>..-ggf</i>  <i>bbb</i>  <i>-ggb</i>  <i>-ffbb</i>  <i>bbbb</i></p> <p><i>Bc {</i>    <i>..-ggc</i>  <i>-ffcc</i>  <i>-2ffb</i>  <i>4.bbb</i>  <i>6.bb</i>  <i>4.b</i></p> <p><i>Bc {</i>    <i>..-ggc</i>  <i>-ffcc</i>  <i>-2ffb</i>  <i>4.bbbc</i>  <i>6.bbcc</i>  <i>4.bccc</i>  <i>cccc</i></p>

<b>17</b> $-aaaa + ffaa + ggga \quad \underline{\hspace{1cm}} \quad hhhh.$	$A . \left\{ \begin{array}{l} ggg \\ ff \\ \hline -bbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} gggb \\ ffb \\ \hline bbbb \end{array} \right.$	$B \left\{ \begin{array}{l} . ggg \\ ff \\ 2.ffb. \\ \hline . -4.bbb \\ -6.bb \\ -4.b \\ \hline Bc \left\{ \begin{array}{l} . . gggc \\ ffcc \\ 2.ffb \\ \hline -4.bbbc \\ -6.bbcc \\ -4.bccc \\ .. cccc \end{array} \right. \end{array} \right. \right.$	<b>20</b> $-aaaa - daaa + ggga \quad \underline{\hspace{1cm}} \quad hhhh.$	$A . \left\{ \begin{array}{l} ggg \\ -d \\ \hline -bbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} gggb \\ -dbbb \\ \hline -bbbb \end{array} \right.$	$B \left\{ \begin{array}{l} . ggg \\ -d \\ \hline -3.db. \\ . . 3.dbb \\ \hline Bc \left\{ \begin{array}{l} . . -gggc \\ -dccc \\ \hline -3.dbcc \\ -4.bbbc \\ -6.bbcc \\ -4.bccc \\ .. cccc \end{array} \right. \end{array} \right. \right.$
<b>18</b> $aaaa + daaa + ggga \quad \underline{\hspace{1cm}} \quad hhhh.$	$A . \left\{ \begin{array}{l} ggg \\ d \\ \hline bbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} gggb \\ dbbb \\ \hline bbbb \end{array} \right.$	$B \left\{ \begin{array}{l} . ggg \\ d \\ 3.db. \\ . . 3.dbb \\ 4.bbb \\ 6.bb \\ \hline 4.b \\ \hline Bc \left\{ \begin{array}{l} . . gggc \\ dccc \\ \hline 3.dbbc \\ 4..bbbc \\ 6.bbcc \\ 4.bccc \\ .. cccc \end{array} \right. \end{array} \right. \right.$	<b>21</b> $aaaa - daaa + ggga \quad \underline{\hspace{1cm}} \quad hhhh.$	$A \left\{ \begin{array}{l} . ggg \\ -d \\ \hline bbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} gggb \\ -dbbb \\ \hline bbbb \end{array} \right.$	$B \left\{ \begin{array}{l} . ggg \\ -d \\ \hline -3.db. \\ . . 3.dbb \\ 4.bbb \\ 6.bb \\ \hline 4.b \\ \hline Bc \left\{ \begin{array}{l} . . -gggc \\ -dccc \\ \hline -3.dbcc \\ -3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ .. cccc \end{array} \right. \end{array} \right. \right.$
<b>19</b> $aaaa + daaa - ggga \quad \underline{\hspace{1cm}} \quad hhhh.$	$A . \left\{ \begin{array}{l} -ggg \\ d \\ \hline bbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} -gggb \\ dbbb \\ \hline bbbb \end{array} \right.$	$B \left\{ \begin{array}{l} . -ggg \\ d \\ 3.db. \\ . . 3.dbb \\ 4.bbb \\ 6.bb \\ \hline 4.b \\ \hline Bc \left\{ \begin{array}{l} . . -gggc \\ dccc \\ \hline 3.dbbc \\ 4..bbbc \\ 6.bbcc \\ 4.bccc \\ .. cccc \end{array} \right. \end{array} \right. \right.$	<b>22</b> $-aaaa + daaa - ggga \quad \underline{\hspace{1cm}} \quad hhhh.$	$A \left\{ \begin{array}{l} . -ggg \\ d \\ \hline bbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} -gggb \\ dbbb \\ \hline bbbb \end{array} \right.$	$B \left\{ \begin{array}{l} . -ggg \\ d \\ \hline -3.db. \\ . . 3.dbb \\ -4.bbb \\ -6.bb \\ \hline -4.b \\ \hline Bc \left\{ \begin{array}{l} . . -gggc \\ dccc \\ \hline 3.dbcc \\ 3.dbbc \\ -4.bbbc \\ -6.bbcc \\ -4.bccc \\ .. cccc \end{array} \right. \end{array} \right. \right.$

<b>23</b> $aaaa - daaa - ggga \underline{\underline{\underline{\underline{\quad}}}}$ $hhhh.$	$A \dots \left\{ \begin{array}{l} -ggg \\ -d \\ -bbb \\ \hline -gggb \\ -dbbb \\ bbbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$  $B . \left\{ \begin{array}{l} -ggg \\ -d \\ -3.db. \\ -3.dbb \\ 4.bbb \\ 6.bb \\ \hline 4.b \\ \\ \end{array} \right.$ $Bc \left\{ \begin{array}{l} -gggc \\ -dccc \\ -3.dbcc \\ -3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ ..cccc \\ \hline \end{array} \right.$	<b>26</b> $aaaa + daaa - ffaa \underline{\underline{\underline{\underline{\quad}}}}$ $hhhh.$	$A \dots \left\{ \begin{array}{l} -ff \\ d \\ bbb \\ \hline -ffbb \\ -d \\ -3.db. \\ -3.dbb \\ dbbb \\ bbbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$  $B . \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$ $Bc \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$
<b>24</b> $-aaaa + daaa + ggga \underline{\underline{\underline{\underline{\quad}}}}$ $hhhh.$	$A \dots \left\{ \begin{array}{l} ggg \\ d \\ bbb \\ \hline gggb \\ dbbb \\ bbbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$  $B . \left\{ \begin{array}{l} ggg \\ d \\ 3.db. \\ 3.dbb \\ -4.bbb \\ -6.bb \\ \hline -4.b \\ \\ \end{array} \right.$ $Bc \left\{ \begin{array}{l} -gggc \\ -dccc \\ -3.dbcc \\ -3.dbbc \\ -4.bbbc \\ -6.bbcc \\ -4.bccc \\ ..cccc \\ \hline \end{array} \right.$	<b>27</b> $-aaaa - daaa + ffaa \underline{\underline{\underline{\underline{\quad}}}}$ $hhhh.$	$A \dots \left\{ \begin{array}{l} ff \\ d \\ bbb \\ \hline -ffbb \\ -d \\ -3.db. \\ -3.dbb \\ dbbb \\ bbbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$  $B . \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$ $Bc \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$
<b>25</b> $aaaa + daaa + ffaa \underline{\underline{\underline{\underline{\quad}}}}$ $hhhh.$	$A \dots \left\{ \begin{array}{l} ff \\ d \\ bbb \\ \hline -ffbb \\ dbbb \\ bbbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$  $B . \left\{ \begin{array}{l} ff \\ 2.ffb \\ d \\ 3.db. \\ 3.dbb \\ 4.bbb \\ 6.bb \\ \hline -4.b \\ \\ \end{array} \right.$ $Bc \left\{ \begin{array}{l} -ffcc \\ 2.ffbc \\ -dccc \\ -3.dbcc \\ -3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ ..cccc \\ \hline \end{array} \right.$	<b>28</b> $aaaa - daaa + ffaa \underline{\underline{\underline{\underline{\quad}}}}$ $hhhh.$	$A \dots \left\{ \begin{array}{l} ff \\ d \\ bbb \\ \hline -ffbb \\ -d \\ -3.db. \\ -3.dbb \\ dbbb \\ bbbb \end{array} \right.$ $Ab \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$  $B . \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$ $Bc \left\{ \begin{array}{l} \\ \\ \\ \hline \end{array} \right.$

<b>29</b>	<b>31</b>
$-aaaa + daaa - ffaa \quad \underline{\hspace{2cm}} \quad hhhh.$	$aaaa - daaa - ffaa \quad \underline{\hspace{2cm}} \quad hhhh.$
$A \dots \left\{ \begin{array}{l} -ff \\ .d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$B \dots \left\{ \begin{array}{l} -ff \\ -2ffb \\ .d \\ .3.db. \\ .3.dbb \\ -4.bbb \\ -6.bb \\ \hline 4.b \\ ffcc \\ 2.ffbc \\ dccc \\ 3.dbcc \\ 3.dbbc \\ -4.bbbc \\ -6.bbcc \\ -4.bccc \\ -cccc \end{array} \right.$
$Ab \left\{ \begin{array}{l} -ff \\ .d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$Ab \left\{ \begin{array}{l} -ff \\ .d \\ bbb \\ \hline -ffbb \\ dbbb \\ bbbb \end{array} \right.$
$Bc \left\{ \begin{array}{l} -ff \\ .d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$B \left\{ \begin{array}{l} -ff \\ -2ffb \\ .d \\ -3.db. \\ .3.dbb \\ 4.bbb \\ 6.bb \\ \hline .ffcc \\ -2.ffbc \\ -dccc \\ -3.dbcc \\ -3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ .cccc \end{array} \right.$
<b>30</b>	<b>32</b>
$-aaaa + daaa + ffaa \quad \underline{\hspace{2cm}} \quad hhhh.$	$aaaa + daaa + ffaa + ggga \quad \underline{\hspace{2cm}} \quad hhhh.$
$A \dots \left\{ \begin{array}{l} ff \\ d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$B \dots \left\{ \begin{array}{l} ff \\ 2ffb \\ d \\ 3.db. \\ .3.dbb \\ -4.bbb \\ -6.bb \\ \hline 4.b \\ .ffcc \\ 2.ffbc \\ dccc \\ 3.dbcc \\ -3.dbbc \\ 4.bbbc \\ -6.bbcc \\ -4.bccc \\ -cccc \end{array} \right.$
$Ab \left\{ \begin{array}{l} ff \\ d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$Ab \left\{ \begin{array}{l} ggg \\ ff \\ d \\ bbb \\ \hline gggb \\ ffbb \\ dbbb \\ bbbb \end{array} \right.$
$Bc \left\{ \begin{array}{l} ff \\ d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$B \left\{ \begin{array}{l} .g .gg \\ .f .ff \\ 2.fff \\ .d .3.db. \\ .3.dbb \\ 4.bbb \\ 6.bb \\ \hline 4.b \\ .g .ggc \\ .f .ffcc \\ 2.fffbc \\ dccc \\ 3.dbcc \\ 3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ .cccc \end{array} \right.$
$Bc \left\{ \begin{array}{l} ff \\ d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$Bc \left\{ \begin{array}{l} .g .ggc \\ .f .ffcc \\ 2.fffbc \\ dccc \\ 3.dbcc \\ 3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ .cccc \end{array} \right.$

<b>29</b>	<b>hhhh.</b>	<b>31</b>
$-aaaa + daaa - ffaa$	$\underline{\hspace{2cm}}$	$aaaa - daaa - ffaa$
$A \dots \left\{ \begin{array}{l} -ff \\ .d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$B \dots \left\{ \begin{array}{l} -ff \\ -2ffb \\ .d \\ .3.db. \\ .3/dbb \\ -4.bbb \\ -6.bb \\ \hline 4.b \\ ffcc \\ 2.ffbc \\ dccc \\ 3.dbcc \\ 3.dbbc \\ -4.bbbc \\ -6.bbcc \\ -4.bccc \\ \hline cccc \end{array} \right.$	$A \dots \left\{ \begin{array}{l} -ff \\ .d \\ bbb \\ \hline -ffbb \\ dbbb \\ bbbb \end{array} \right.$
$Ab \left\{ \begin{array}{l} -ff \\ .d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$Bc \left\{ \begin{array}{l} -ff \\ -2ffb \\ .d \\ .3.db. \\ .3/dbb \\ -4.bbb \\ -6.bb \\ \hline 4.b \\ ffcc \\ 2.ffbc \\ dccc \\ 3.dbcc \\ 3.dbbc \\ -4.bbbc \\ -6.bbcc \\ -4.bccc \\ \hline cccc \end{array} \right.$	$B \left\{ \begin{array}{l} -ff \\ -2ffb \\ .d \\ -3.db. \\ \hline -3/dbb \\ 4.bbb \\ 6.bb \\ \hline 4.b \\ ffcc \\ -2.ffbc \\ -dccc \\ -3.dbcc \\ Bc \left\{ \begin{array}{l} -3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ .cccc \end{array} \right. \end{array} \right.$
<b>30</b>	<b>hhhh.</b>	<b>32</b>
$-aaaa + daaa + ffaa$	$\underline{\hspace{2cm}}$	$aaaa + daaa + ffaa + ggga$
$A \dots \left\{ \begin{array}{l} ff \\ d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$B \dots \left\{ \begin{array}{l} ff \\ 2ffb \\ d \\ .3.db. \\ .3/dbb \\ -4.bbb \\ -6.bb \\ \hline 4.b \\ ffcc \\ 2.ffbc \\ dccc \\ 3.dbcc \\ 3.dbbc \\ 4.bbbc \\ -6.bbcc \\ -4.bccc \\ \hline cccc \end{array} \right.$	$A \dots \left\{ \begin{array}{l} ggg \\ ff \\ d \\ bbb \\ \hline gggb \\ ffbb \\ dbbb \\ bbbb \end{array} \right.$
$Ab \left\{ \begin{array}{l} ff \\ d \\ -bbb \\ \hline -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$Bc \left\{ \begin{array}{l} ff \\ 2ffb \\ d \\ .3.db. \\ .3/dbb \\ -4.bbb \\ -6.bb \\ \hline 4.b \\ ffcc \\ 2.ffbc \\ dccc \\ 3.dbcc \\ 3.dbbc \\ 4.bbbc \\ -6.bbcc \\ -4.bccc \\ \hline cccc \end{array} \right.$	$B \left\{ \begin{array}{l} ggg \\ ff \\ d \\ .d \\ .3.db. \\ .3/dbb \\ 4.bbb \\ 6.bb \\ \hline 4.b \\ gggc \\ ffcc \\ 2.ffbc \\ dccc \\ 3.dbcc \\ 3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ .cccc \end{array} \right.$
<b>31</b>	<b>hhhh.</b>	<b>32</b>
$aaaa - daaa - ffaa$	$\underline{\hspace{2cm}}$	$aaaa + daaa + ffaa + ggga$
$A \dots \left\{ \begin{array}{l} -ff \\ .d \\ bbb \\ \hline -ffbb \\ dbbb \\ bbbb \end{array} \right.$	$Ab \left\{ \begin{array}{l} -ff \\ .d \\ bbb \\ \hline -ffbb \\ dbbb \\ bbbb \end{array} \right.$	$A \dots \left\{ \begin{array}{l} ggg \\ ff \\ d \\ bbb \\ \hline gggb \\ ffbb \\ dbbb \\ bbbb \end{array} \right.$
$B \left\{ \begin{array}{l} -ff \\ -2ffb \\ .d \\ -3.db. \\ \hline -3/dbb \\ 4.bbb \\ 6.bb \\ \hline 4.b \\ ffcc \\ -2.ffbc \\ -dccc \\ -3.dbcc \\ Bc \left\{ \begin{array}{l} -3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ .cccc \end{array} \right. \end{array} \right.$	$Bc \left\{ \begin{array}{l} -ff \\ -2ffb \\ .d \\ -3.db. \\ \hline -3/dbb \\ 4.bbb \\ 6.bb \\ \hline 4.b \\ ffcc \\ -2.ffbc \\ -dccc \\ -3.dbcc \\ Bc \left\{ \begin{array}{l} -3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ .cccc \end{array} \right. \end{array} \right.$	$B \left\{ \begin{array}{l} ggg \\ ff \\ d \\ .d \\ .3.db. \\ .3/dbb \\ 4.bbb \\ 6.bb \\ \hline 4.b \\ gggc \\ ffcc \\ 2.ffbc \\ dccc \\ 3.dbcc \\ 3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ .cccc \end{array} \right.$



37		39	
$\overline{aaaa} - \overline{daaa} + \overline{ffaa} - \overline{ggga}$	$\overline{\overline{\overline{\overline{hhhh}}}}$	$\overline{aaaa} + \overline{daaa} - \overline{ffaa} - \overline{ggga}$	$\overline{\overline{\overline{\overline{hh}}}}$
$A.$	$\left\{ \begin{array}{l} ggg \\ ff \\ -d \\ \underline{bbb} \\ gggb \\ fbbb \\ -dbbb \\ \underline{bbbb} \end{array} \right.$	$B.$	$\left\{ \begin{array}{l} \dots ggg \\ \dots ff \\ 2.fff \\ \dots .d \\ -3.db. \\ -3.dbb \\ 4.bbb \\ 6.bb \\ \underline{4.b} \\ \dots gggc \\ \dots ffcc \\ 2.ffc \\ -dccc \\ -3.dbcc \\ -3.dbbc \\ 4.bbbc \\ 6.bbcc \\ 4.bccc \\ \dots cccc \end{array} \right.$
$Ab$		$Ab$	$\left\{ \begin{array}{l} -ggg \\ -ff \\ d \\ \underline{bbb} \\ -gggb \\ -ffbb \\ dbbb \\ bbbb \end{array} \right. \quad \left. \begin{array}{l} \dots .d \\ -3.db. \\ -3.dbb \\ dbbb \\ bbbb \end{array} \right.$
$38$		$40$	
$\overline{aaaa} + \overline{daaa} - \overline{ffaa} + \overline{ggga}$	$\overline{\overline{\overline{\overline{hhhh}}}}$	$\overline{aaaa} - \overline{daaa} + \overline{ffaa} - \overline{ggga}$	$\overline{\overline{\overline{\overline{hh}}}}$
$A.$	$\left\{ \begin{array}{l} -ggg \\ -ff \\ d \\ \underline{bbb} \\ -gggb \\ -ffbb \\ dbbb \\ -bbbb \end{array} \right.$	$B.$	$\left\{ \begin{array}{l} \dots -ggg \\ \dots -ff \\ -2.fff \\ \dots .d \\ 3.db. \\ .3.dbb \\ -4.bbb \\ -6.bb \\ \underline{-4.b} \\ \dots gggc \\ \dots ffcc \\ -2.ffc \\ dccc \\ 3.dbcc \\ 3.dbbc \\ -4.bbbc \\ -6.bbcc \\ -4.bccc \\ \dots cccc \end{array} \right.$
$Ab$		$Ab$	$\left\{ \begin{array}{l} ggg \\ ff \\ -d \\ \underline{bbb} \\ gggb \\ fbbb \\ -dbbb \\ \underline{bbbb} \end{array} \right.$
$Bc$		$Bc$	



45		46	
$aaaa - daaa - ffaa - ggga = hhhh.$		$-aaaa + daaa + ffaa + ggga = hhhh.$	
$A . \left\{ \begin{array}{l} -ggg \\ -ff \\ -d \\ \hline bbb \\ -gggb \\ -ffbb \\ -dbbb \\ \hline bbbb \end{array} \right.$	$B . \left\{ \begin{array}{l} . - ggg \\ . . - ff \\ - 2. ffb \\ . . - d \\ - 3. db. \\ - 3. dbb \\ 4. bbb \\ 6. bb \\ \hline 4. b \\ . . - gggc \\ . . - ffcc \\ - 2. ffbc \\ - dccc \\ - 3. dbcc \\ - 3. dbbc \\ 4. bbcc \\ 6. bbcc \\ 4. bccc \\ \hline cccc \end{array} \right.$	$A . \left\{ \begin{array}{l} ggg \\ ff \\ d \\ \hline bbb \\ -gggb \\ -ffbb \\ -dbbb \\ \hline bbbb \end{array} \right.$	$B . \left\{ \begin{array}{l} . . ggg \\ . . ff \\ 2. ffb \\ . . d \\ 3. db. \\ . 3. dbb \\ - 4. bbb \\ - 6. bb \\ - 4. b \\ . . gggc \\ . . ffcc \\ 2. ffbc \\ dccc \\ 3. dbcc \\ 3. dbbc \\ - 4. bbcc \\ - 6. bbcc \\ - 4. bccc \\ . . cccc \end{array} \right.$
$Ab$		$Ab$	

Sic igitur exacta est aequationum de triplici genere proposito cum canonibus suis directoriis universa descriptio : Quae ut Problematum superiorum Corollarium generale, & ad Exegetiken numerosam maxime conveniens Appendix, secundae & exegeticae tractatus huius parti finem imponat.

#### To Students of Mathematics.

Since this is the first work on Analysis to be published from all of the Mathematical writings of *Thomas Harriot*, it has not been achieved without consultation. For, like the rest of his works, with a multitude of novel inventions, for this tract is composed entirely in the Logistic style (the *Logistices speciosae* is composed wholly from all kinds of examples), which up to this time is unusual ; surely for this reason, this tract shall be the forerunner for the remainder of Harriot's writings, beyond the special use of this priceless tract, which are now being seriously considered for publication, which the present work may serve as a necessary preparation or as an opportune introduction. Concerning which indeed from the accessibility of this work for its usefulness in Mathematics, the serious student is to be forewarned from these few things of the priceless works to be introduced.

#### Ad Mathematics studiosos.

Ex omnibus *Thomas Harriot* scriptis Mathematiciis, quod opus hoc Analyticum primum in publicum emissum sit, haud inconsulto factum est. Nam, quum reliqua eius opera, multiplici inventurum novitate excellente, eodem omnino quo tractatus iste (*Logistices speciosae* exemplis omnimodis totus compositus) stilo Logistico, hactenus inusitato, conscripta sint, ea certe ratione sit, ut prodromus hic tractus, ultra proprium ipsius inaestimabilem usum, reliquis Harriot scriptis, de quorum editione iam serio cogitatur, pro necessario praeparamento sive introductorio opportune inservire possit. De qua

quidem accessoria operis huius utilitate rerum Mathematicarum studiosos paucis his  
praemonuisse operaे precium esse duximus.