Appendix

A Directory of Characters

In the following tables we list the Examples where characters with a given period on a field with a given discriminant $D < 0$ occur. We begin with the most frequent discriminants -3, -4, -8, -24. Thereafter the discriminants are ordered according to their absolute values. Each table is ordered in ascending absolute values of the character periods.

$D = -3$

period	Example(s)
1	11.1, 11.4, 18.17, 18.18, 20.30, 25.7, 26.27, 26.28, 26.33, 26.36
$1+\omega$	9.7, 11.4, 18.15, 20.26, 26.19, 26.24, 26.33
2	11.11, 18.16, 20.28, 26.13, 26.16, 26.27, 26.33, 26.36
3	11.5, 11.13
$2(1+\omega)$	9.3, 9.9, 15.14, 18.13, 20.24, 20.26, 26.6, 26.16, 26.19, 26.24, 26.33
4	11.21, 11.22, 25.6, 26.13, 26.16, 26.25, 26.33, 26.36
$4+\omega$, $4+\overline{\omega}$	12.3
$2(2+\omega)$, $2(2+\overline{\omega})$	16.17
6	11.1, 11.7, 11.9, 11.15, 11.20, 14.4, 25.11
$4(1+\omega)$	9.1, 9.2, 10.16, 10.23, 11.21, 11.22, 13.7, 13.15, 13.24, 15.14, 26.3, 26.6, 26.16, 26.24, 26.25, 26.33
$3(2+\omega)$, $3(2+\overline{\omega})$	16.13, 16.18
8	25.5, 25.8, 25.19, 25.20, 26.16

G. Köhler, *Eta Products and Theta Series Identities*,
Springer Monographs in Mathematics,
DOI 10.1007/978-3-642-16152-0,

period	Example(s)
12	11.17, 16.20, 18.4, 20.24, 20.26, 20.28, 20.30, 25.1, 25.10, 25.15
$8(1+\omega)$	13.2, 13.11, 13.12, 13.18, 13.24, 13.27, 15.3, 15.17, 19.4, 25.9, 26.6, 26.16, 29.12
$6(2+\omega)$, $6(2+\overline{\omega})$	16.19
16	25.2, 25.20
$10(1+\omega)$	14.8
$8(2+\omega)$, $8(2+\overline{\omega})$	30.12
24	18.8, 20.12, 25.3, 25.16, 25.18, 25.26, 25.27, 26.7, 26.17, 26.23, 26.32
$4(5+2\omega)$, $4(5+2\overline{\omega})$	12.9
$16(1+\omega)$	13.12, 13.30, 15.5, 19.3, 19.4
$8(3+\omega)$, $8(3+\overline{\omega})$	31.9
$12(2+\omega)$, $12(2+\overline{\omega})$	16.21
$20(1+\omega)$	20.6
$8(3+2\omega)$, $8(3+2\overline{\omega})$	31.15
$8(4+\omega)$, $8(4+\overline{\omega})$	23.18
$24(1+\omega)$	20.17
48	25.4, 25.31, 25.37, 25.38
$8(5+2\omega)$, $8(5+2\overline{\omega})$	22.5, 22.16
$32(1+\omega)$	15.6, 15.26, 15.27
$8(7+\omega)$, $8(7+\overline{\omega})$	21.13
$16(4+\omega)$, $16(4+\overline{\omega})$	23.23
$16(5+2\omega)$, $16(5+2\overline{\omega})$	22.22
$64(1+\omega)$	19.11
$16(7+\omega)$, $16(7+\overline{\omega})$	21.14

$D=-4$

period	Example(s)
1	10.21, 13.5, 18.19, 24.31, 26.29, 26.32, 26.37, 29.14
$1+i$	10.6, 10.21, 15.11, 17.14, 20.25, 26.18, 26.26, 26.32, 26.37
2	9.5
$2\pm i$	24.31
$2(1+i)$	10.7, 10.9
3	10.15, 18.15, 18.19, 26.20, 26.23, 26.29, 26.32, 29.14
4	13.5, 13.6, 15.11, 15.21, 24.26, 26.14, 26.18
$3(1+i)$	10.17, 18.12, 18.14, 20.25, 26.5, 26.18, 26.32
$2(2\pm i)$	12.1, 12.18, 24.25, 24.29
$4(1+i)$	10.1, 10.2, 10.18, 13.17, 13.22, 15.28, 15.30
6	9.1, 9.2, 10.23, 11.18, 11.21, 11.22

period	Example(s)
$3(2 \pm i)$	17.10, 24.5
$2(3 \pm 2i)$	22.25
8	13.3, 13.23, 15.10, 15.15, 15.29, 15.30, 19.6
$6(1 + i)$	10.12, 18.3
$4(2 \pm i)$	24.1, 24.26
9	20.11
$8(1 + i)$	19.6, 19.7
12	13.2, 13.9, 15.3, 15.17, 25.12, 26.5, 26.14, 26.18, 29.12
$4(1 \pm 3i)$	17.1
$9(1 + i)$	20.16
$6(2 \pm i)$	12.17, 16.14, 16.16
16	15.12, 15.18, 15.24
$4(4 \pm i)$	22.3
$12(1 + i)$	10.5, 10.19, 10.24, 13.25, 13.28, 17.13, 18.6, 20.9, 20.13, 25.14
$8(2 \pm i)$	24.10
18	14.1, 14.5
$6(3 \pm i)$	17.9
20	29.2
$4(1 \pm 5i)$	17.6
$4(5 \pm 3i)$	17.7
24	13.4, 13.31, 15.5, 15.19, 15.22, 15.23, 19.3, 24.17, 25.13, 25.22, 25.23, 25.24, 29.7
$18(1 + i)$	18.7, 20.16
$12(2 \pm i)$	24.11
$20(1 + i)$	20.5
28	29.1
$8(3 \pm 2i)$	22.18
30	20.6
$6(5 \pm i)$	17.23
32	19.9
$8(4 \pm i)$	22.10
$24(1 + i)$	15.6
36	25.28, 26.7, 26.17, 26.23, 26.32, 29.8
$12(3 \pm i)$	17.11, 17.12, 24.13, 24.16, 27.10
40	29.3
$12(3 \pm 2i)$	22.20
$4(9 \pm 7i)$	28.4
$4(11 \pm 3i)$	28.4
48	15.13, 15.20, 15.25, 15.27
$36(1 + i)$	18.10, 20.20, 20.21, 25.29, 25.30, 25.35
$4(13 \pm i)$	28.6
$4(11 \pm 7i)$	28.6
$24(2 \pm i)$	24.18, 24.19

period	Example(s)
$12(5 \pm i)$	17.22
$12(5 \pm 3i)$	17.26
72	25.33, 25.35, 29.10
$60(1 + i)$	20.8
$24(3 \pm 2i)$	22.21
$24(4 \pm i)$	22.11
120	29.4, 29.5

$D = -8$

period	Example(s)
1	15.2, 26.30, 26.35
$\sqrt{-2}$	13.13, 15.9, 15.30, 19.8, 26.9, 26.12, 26.35
$1 \pm \sqrt{-2}$	26.35
2	13.13, 15.2, 15.30, 19.8, 26.9, 26.12, 26.30, 26.35
$2\sqrt{-2}$	13.13, 13.14, 13.20
3	26.22, 26.30
$2(1 \pm \sqrt{-2})$	26.9, 26.35
4	10.1, 10.2, 10.11, 15.30
$3 \pm 2\sqrt{-2}$	22.15
$3\sqrt{-2}$	26.1, 26.12
$2(2 \pm \sqrt{-2})$	25.8, 25.19, 25.20
$4\sqrt{-2}$	13.3, 13.8, 13.23, 15.15, 15.29, 15.30, 26.9, 26.12
6	26.1, 26.12, 26.22, 26.30
$4(1 \pm \sqrt{-2})$	18.1, 18.5, 27.1
8	15.1, 15.2, 15.4, 19.6, 19.7
$2(3 \pm 2\sqrt{-2})$	22.15
$6\sqrt{-2}$	25.9
$4(2 \pm \sqrt{-2})$	25.2, 25.20, 26.9
12	18.6, 20.9, 20.13, 20.19, 25.14
$4(3 \pm \sqrt{-2})$	17.4
$8(1 \pm \sqrt{-2})$	25.21
$6(2 + \sqrt{-2})$	25.16
16	19.1, 19.2
$12\sqrt{-2}$	25.22, 26.1, 26.12, 29.7
$4(2 \pm 3\sqrt{-2})$	23.6
20	20.5
$12(1 + \sqrt{-2})$	18.9, 18.10, 25.35, 27.1
$4(4 \pm 3\sqrt{-2})$	22.13
28	20.4

period	Example(s)
$4(1 \pm 5\sqrt{-2})$	28.15
$4(7 \pm \sqrt{-2})$	28.15
$12(2 + \sqrt{-2})$	25.31, 25.35, 25.39
36	20.10, 20.18

$D = -24$

period	Example(s)
1	26.31, 26.34, 27.18
$\sqrt{-2}$	26.8, 26.11, 26.34
$\sqrt{3}$	26.21, 26.31
2	26.31, 27.17
$\sqrt{-6}$	26.2, 26.11, 26.21, 26.31
$2\sqrt{-2}$	26.8, 26.11, 26.34
3	13.16, 27.13
$2\sqrt{3}$	13.16, 13.26, 26.2, 26.11, 26.21, 26.31
4	18.1, 18.5, 27.1
$\sqrt{3} \pm 3\sqrt{-2}$	23.17
$3\sqrt{3}$	25.11
$4\sqrt{-2}$	25.21, 26.8, 26.11
6	27.14
$4\sqrt{3}$	10.5, 10.13, 10.20, 10.24, 17.13, 20.19
8	27.15
$6\sqrt{-2}$	25.17
$4\sqrt{-6}$	13.4, 13.10, 13.11, 13.12, 13.29, 15.19, 15.22, 15.23, 19.3, 19.4, 24.17, 25.24, 29.7
$6\sqrt{3}$	25.10
$4(1 \pm \sqrt{-6})$	28.9
$2(2\sqrt{3} \pm 3\sqrt{-2})$	24.8
12	18.2, 18.9, 18.11, 20.20, 25.30, 27.1
$4(2 \pm \sqrt{-6})$	30.2
$2(6 \pm \sqrt{-6})$	23.17
$8\sqrt{3}$	15.7
$4(3 \pm \sqrt{-6})$	17.2, 17.12, 27.9
$12\sqrt{-2}$	25.32, 25.35, 25.36, 25.39, 25.40, 25.41
$4(4 \pm \sqrt{-6})$	31.1
$8\sqrt{-6}$	15.27
$12\sqrt{3}$	20.14, 20.15, 20.22
$4(2\sqrt{3} \pm 3\sqrt{-2})$	24.12, 24.15, 24.16, 24.18, 24.20, 24.21
$4(3 \pm 2\sqrt{-6})$	17.21

period	Example(s)
24	26.2, 26.11, 27.16
$4(6 \pm \sqrt{-6})$	23.4, 23.22, 23.25, 23.26
$16\sqrt{3}$	19.5
$4(4\sqrt{3} \pm 3\sqrt{-2})$	23.11
$20\sqrt{3}$	20.8
$16\sqrt{-6}$	19.10
$20\sqrt{-6}$	29.4

$D = -7$

period	Example(s)
1	12.4, 20.1
$\frac{1}{2}(1 \pm \sqrt{-7})$	17.19
2	23.27
$\frac{1}{2}(5 \pm \sqrt{-7})$	23.16, 27.7
3	12.3, 16.18
4	23.5, 23.27
$2(1 \pm \sqrt{-7})$	27.6
8	23.16
$\frac{3}{2}(5 \pm \sqrt{-7})$	23.17
9	20.2
16	23.3, 23.20, 23.28
$8\sqrt{-7}$	29.1
24	23.17
48	23.4, 23.26

$D = -11$

period	Example(s)
2	12.6
4	23.1
16	23.2, 23.7
$4(3 \pm \sqrt{-11})$	31.23

$D = -15$

period	Example(s)
1	16.1, 30.8
$\frac{1}{2}(\sqrt{3} \pm \sqrt{-5})$	30.8
$\sqrt{3}$	12.12
2	30.8
3	16.2, 30.1
$\frac{1}{2}(\sqrt{3} \pm 3\sqrt{-5})$	17.10, 24.5

$D = -19$

period	Example(s)
$\frac{1}{2}(1 \pm \sqrt{-19})$	16.11
6	12.11
12	21.2
24	21.13
48	21.14

period	Example(s)
$\frac{1}{2}(9 \pm \sqrt{-15})$	24.6
6	30.1
8	30.6
$2(3 + \sqrt{-15})$	17.9
$8\sqrt{3}$	24.6, 24.11
16	30.2
24	30.3
$16\sqrt{3}$	24.14, 24.22
48	30.4

$D = -20$

period	Example(s)
1	24.4, 24.28, 24.29
$\sqrt{2}$	17.15, 24.27
2	12.1, 12.18, 24.25, 24.29
$\sqrt{2}(1 \pm \sqrt{-5})$	16.15
4	24.1, 24.3
6	16.16
$2\sqrt{-10}$	20.7
8	24.2, 24.7, 24.9
$4(1 \pm \sqrt{-5})$	28.7
$4(3 \pm \sqrt{-5})$	28.1
18	20.3

$D = -23$

period	Example(s)
1	12.8
$\frac{1}{2}(3 \pm \sqrt{-23})$	21.3
8	21.3, 21.4, 21.9
$4(1 - \sqrt{-23})/\Lambda_{23}$, $4(1 + \sqrt{-23})/\overline{\Lambda}_{23}$	31.18
16	21.1, 21.9

$D = -35$

period	Example(s)
1	31.22
2	16.7, 31.22
4	31.19, 31.21
16	31.20

$D = -39$

period	Example(s)
1	31.10
Λ_{39}, $\overline{\Lambda}_{39}$	31.10
$\sqrt{-3}$	12.15
2	31.10
3	16.5, 31.6
$\frac{1}{2}(3 \pm \sqrt{-39})$	17.24
6	31.6
8	31.9
$4\sqrt{-3}\,\Lambda_{39}$	17.23, 17.24
$8\sqrt{-3}$	22.20
24	31.7
$16\sqrt{-3}$	22.23, 22.24
48	31.8

$D = -40$

period	Example(s)
1	24.30, 27.12
$\sqrt{-2}$	24.23
2	24.23, 24.30, 27.12
3	24.6
4	17.1
$4\sqrt{-2}$	24.10, 24.24
8	27.8
$6\sqrt{-2}$	24.6
12	17.2, 27.9
$4\sqrt{-10}$	29.3
$4(1 \pm \sqrt{-10})$	28.3
$4(2 \pm \sqrt{-10})$	31.20
$12\sqrt{-2}$	24.12, 24.14, 24.16, 24.20, 24.22
$12\sqrt{5}$	20.8
24	27.11

$D = -51$

period	Example(s)
$8\sqrt{3}$	22.8
$2(3 \pm \sqrt{-51})$	16.10
$16\sqrt{3}$	22.12

$D = -52$

period	Example(s)
1	22.26
$\sqrt{2}$	17.25
2	22.25
4	22.7
6	12.9
8	22.4, 22.17
$6\sqrt{2}$	17.23
12	22.5
24	22.6, 22.19, 22.20

$D = -55$

period	Example(s)
1	31.24
3	16.8
8	31.23

$D = -56$

period	Example(s)
1	23.16, 27.7
2	27.6
$2\sqrt{2}$	23.16
4	17.3
$4\sqrt{2}$	23.3, 23.19, 23.20, 23.28
8	27.5

$D = -68$

period	Example(s)
2	12.10, 22.14
4	22.1, 22.3
$4\sqrt{2}$	17.7
8	22.2, 22.9, 22.10

$D = -84$

period	Example(s)
1	30.13
3	30.9
$2\sqrt{3}$	12.13
4	30.12
$2\sqrt{6}$	17.17
6	16.3
$4\sqrt{6}$	17.18, 23.24
12	30.10
$8\sqrt{3}$	23.21, 23.22, 23.24, 23.25
$4(3 \pm \sqrt{-21})$	28.2
24	30.11

$D = -88$

period	Example(s)
1	23.15, 27.4
$\sqrt{-2}$	23.14
2	23.14, 23.15, 27.4
4	17.4
$4\sqrt{-2}$	23.6, 23.14
8	27.2
12	17.5
$12\sqrt{-2}$	23.10
24	27.3

$D = -91$

period	Example(s)
6	16.12

$D = -95$

period	Example(s)
1	16.11

$D = -104$

period	Example(s)
4 $4\sqrt{2}$ $4\Lambda_{26},\ 4\overline{\Lambda}_{26}$	17.6 22.18 28.13

$D = -120$

period	Example(s)
4 $2\sqrt{-6}$ $4\sqrt{-3}$ $4\sqrt{-6}$ 12 $4\sqrt{-30}$ $4(3 \pm \sqrt{-30})$	28.7 24.8 17.11, 24.13, 24.16, 27.10 24.15, 24.19, 24.21 28.8 29.5 28.5

$D = -132$

period	Example(s)
1 $2\sqrt{3}$ 4 $2\sqrt{6}$ 6 $4\sqrt{3}$ 8 12 $8\sqrt{3}$ 24	31.5 12.14 31.4 17.20 16.4 23.8 31.1 31.2 23.9, 23.12 31.3

$D = -136$

period	Example(s)
1 $2\sqrt{2}$ 4 $4\sqrt{2}$ 12	22.15 22.15 17.7 22.10, 22.13 17.8

$D = -152$

period	Example(s)
$\frac{4}{\Lambda_{38}}(2 - \sqrt{-38}),$ $\frac{4}{\overline{\Lambda}_{38}}(2 + \sqrt{-38})$	31.12

$D = -168$

period	Example(s)
4 $2\sqrt{6}$ $4\sqrt{3}$ $4\sqrt{6}$ 12	28.9 23.18 17.18, 23.24 23.22, 23.23, 23.24 28.10

$D = -184$

period	Example(s)
1	21.3
$2\sqrt{2}$	21.3, 21.9
$4\sqrt{2}$	21.4, 21.9
$12\sqrt{2}$	21.7, 21.8

$D = -228$

period	Example(s)
1	31.16
3	31.11
4	31.15
$2\sqrt{6}$	17.27
6	16.6
$4\sqrt{3}$	21.10
8	31.12
12	31.13
$8\sqrt{3}$	21.11
24	31.14

$D = -260$

period	Example(s)
2	16.9

$D = -264$

period	Example(s)
4	28.11
$4\sqrt{3}$	17.5, 17.21
$4\sqrt{6}$	23.10, 23.11, 23.13
12	28.12

$D = -276$

period	Example(s)
4	31.18
$8\sqrt{3}$	21.5, 21.7, 21.8
12	31.17

$D = -280$

period	Example(s)
4	28.1
12	28.2

$D = -312$

period	Example(s)
4	28.13
$2\sqrt{6}$	22.16
$4\sqrt{3}$	17.22
$4\sqrt{6}$	22.21, 22.22
12	28.14

$D = -340$

period	Example(s)
6	16.10

$D = -408$

period	Example(s)
4	28.15
$2\sqrt{6}$	22.8
$4\sqrt{3}$	17.26
$4\sqrt{6}$	22.11, 22.12
12	28.16

$D = -440$

period	Example(s)
4	28.3

$D = -456$

period	Example(s)
4	28.17
$2\sqrt{6}$	21.13
$4\sqrt{3}$	17.28
$4\sqrt{6}$	21.12, 21.14
12	28.18

$D = -520$

period	Example(s)
4	28.4
12	28.5

$D = -552$

period	Example(s)
4	28.19
$4\sqrt{6}$	21.6, 21.7, 21.8
12	28.20

$D = -680$

period	Example(s)
4	28.6

In the following tables we list the examples where Hecke characters on real quadratic fields occur. For the most frequent discriminants 8, 12 and 24 we arrange the tables as before where, however, the character periods are not listed according to their absolute values, but rather according to the absolute values of their algebraic norms. For other discriminants D we just list the values of D and the numbers of the examples, but do not indicate periods of characters.

These tables will also display all our examples of identities of theta series on three distinct quadratic fields.

$D = 8$

period	Example(s)
$3 - \sqrt{2}$	23.16, 27.7
4	10.1, 15.28, 15.30
$5 \pm \sqrt{2}$	21.3
$2(3 \pm \sqrt{2})$	27.6
$4\sqrt{2}$	13.3, 15.29
$2(2 + 3\sqrt{2})$	23.16
8	19.6, 19.7
$6\sqrt{2}$	13.11, 19.4
12	18.6, 20.9, 20.13, 25.14
$2(2 \pm 5\sqrt{2})$	21.3
$4(2 \pm 3\sqrt{2})$	23.3, 23.20
$4(5 \pm 2\sqrt{2})$	17.7
$12\sqrt{2}$	13.12, 15.23, 19.4, 25.22, 29.7
20	20.5
$4(4 \pm 5\sqrt{2})$	22.10
$4(2 \pm 5\sqrt{2})$	21.9
$12(3 + \sqrt{2})$	17.18
$24\sqrt{2}$	15.27
$6(4 \pm 5\sqrt{2})$	22.8
36	18.10, 25.35
$12(2 \pm 3\sqrt{2})$	23.22, 23.24
$36\sqrt{2}$	25.35
$12(4 \pm 5\sqrt{2})$	22.12
$12(2 \pm 5\sqrt{2})$	21.7

$D = 12$

period	Example(s)
$2\sqrt{3}$	9.1
$4(1 + \sqrt{3})$	18.1, 18.5, 27.1
$4\sqrt{3}$	13.2, 15.3, 29.12
8	25.21
$4(3 + \sqrt{3})$	20.19
12	26.7, 26.17, 26.23, 26.32
$8\sqrt{3}$	15.5, 19.3
$12(1 + \sqrt{3})$	18.9, 27.1
$10\sqrt{3}$	20.6
$2(9 + \sqrt{3})$	17.23

period	Example(s)
$4(2 \pm 3\sqrt{3})$	31.18
$8(3 + \sqrt{3})$	15.6
$4(1 \pm 3\sqrt{3})$	28.13
24	25.39
$4(3 \pm 4\sqrt{3})$	22.20
$4(3 \pm 5\sqrt{3})$	17.5
$8(6 \pm \sqrt{3})$	23.10
$8(9 \pm 2\sqrt{3})$	21.7, 21.8

$D = 24$

period	Example(s)
$2(2 + \sqrt{6})$	25.8, 25.19
$3 \pm 2\sqrt{6}$	24.6
$2\sqrt{6}$	25.9
$4(2 + \sqrt{6})$	25.2
$4(3 + \sqrt{6})$	10.5, 17.13
$6(2 + \sqrt{6})$	25.16
$4(1 \pm \sqrt{6})$	28.7
$4\sqrt{6}$	13.4, 15.22, 15.23, 24.17, 25.24, 29.7
$2(6 \pm \sqrt{6})$	24.6
$4(9 \pm 4\sqrt{6})$	17.12
$12(2 + \sqrt{6})$	25.31, 25.35
$8\sqrt{6}$	15.27
$12(3 + \sqrt{6})$	20.20
$2(6 \pm 5\sqrt{6})$	21.13
$4(6 \pm \sqrt{6})$	24.14, 24.18, 24.22
$4(4 \pm 3\sqrt{6})$	31.12
$20(3 + \sqrt{6})$	20.8
$4(6 \pm 5\sqrt{6})$	21.14
$4(12 \pm \sqrt{6})$	21.8
$20\sqrt{6}$	29.4

D	Example(s)
5	12.1, 24.1, 24.8, 24.21, 24.25, 31.23
13	22.25, 31.9
17	22.3, 22.13, 22.15
21	12.3
28	28.9, 29.1, 30.12
40	17.1, 24.10, 29.3, 30.2
44	17.4, 17.21, 23.6, 23.11, 28.3
56	23.18, 23.22, 23.23, 23.25, 28.1, 31.20
60	16.10, 17.2, 17.9, 17.10, 20.8, 24.11, 24.12, 24.16, 24.20, 27.9
76	31.15
88	31.1
104	17.6, 22.16, 22.18, 22.22
120	17.11, 24.13, 24.16, 24.19, 27.10, 28.2, 29.5
136	17.7, 22.10
152	21.13, 21.14
156	12.9, 17.23, 22.5, 22.20, 28.5
168	23.4, 23.17, 23.26
204	28.15
312	17.22, 22.21
408	17.26, 22.11
520	28.4
680	28.6

B Index of Notations

A_r	the group of one-units modulo $\mathfrak{p}^r$, for a prime ideal $\mathfrak{p}$	§6.1
d	a square-free positive integer	
D	the discriminant of an imaginary quadratic field, $D = -d$ or $D = -4d$	§5.2
$e(z)$	$= \exp(2\pi iz) = e^{2\pi iz}$	
$E_k(z)$	Eisenstein series of weight k for the modular group	§1.5
$E_{k,\,N,\,\delta}(z)$	Eisenstein series for the group $\Gamma^*(N)$, with k even, $\delta = \pm 1$	§1.6
$E_{k,\,P,\,\delta i}(z)$	Eisenstein series for the group $\Gamma^*(P)$, with $P \neq 2$ prime, $(-1)^k = \left(\frac{-1}{P}\right)$, $\delta = \pm 1$	§1.6
$\mathbb{H}$	$= \{x + iy \in \mathbb{C} \mid x \in \mathbb{R}, y > 0\}$, the upper half plane	§1.1
$J(L, z)$	$= cz + d$ for $L = \begin{pmatrix} * & * \\ c & d \end{pmatrix}$ in $\mathrm{SL}_2(\mathbb{R})$	§1.3
$\mathcal{J}_d$	a system of integral ideal numbers for $\mathbb{Q}(\sqrt{-d})$	§5.5
$(\mathcal{J}_d/(M))^\times$	group of coprime residues modulo M	§5.5
k	the weight of a modular form	§1.4
K	an algebraic number field	
$\mathcal{K}(N)$	the cone of holomorphic eta products of level N	§2.5
$\mathcal{K}^*(N)$	the cone of holomorphic eta products for $\Gamma^*(N)$	§3.5
$\mathcal{M}(\Gamma, k, v)$	vector space of modular forms	§1.4
$\mathcal{M}(\Gamma_0(N), k, \chi)$	vector space of modular forms	§1.7
N	a positive integer, usually the level of an eta product	
N	$= N_{K/\mathbb{Q}}$, the norm function for ideals in a number field K	
$\mathcal{O}_d$	the ring of integers in $\mathbb{Q}(\sqrt{-d})$	§5.2
$r_k(n)$	the number of representations of n as a sum of k squares	§10.5
$R^\times$	the group of units in a ring R	
s	the numerator of an eta product	§2.1
$S(N, k)$	the simplex of holomorphic eta products of level N and weight k	§3.1
$\mathcal{S}(N, k)$	the simplex of holomorphic eta products of level N and weight $\leq k$	§3.1
$S(N, k)^{\mathrm{pr}}$	projection of $S(N, k)$	§3.1
$S^*(N, k)$	the simplex of holomorphic eta products of weight k for $\Gamma^*(N)$	§3.5
$S^*(N, k)^{\mathrm{pr}}$	the projection of $S^*(N, k)$	§3.5
$\mathcal{S}(\Gamma, k, v)$	vector space of cusp forms	§1.4
$\mathcal{S}(\Gamma_0(N), k, \chi)$	vector space of cusp forms	§1.7
$\mathrm{sgn}(x)$	the sign of a real number $x \neq 0$	§1.3
t	the denominator of an eta product	§2.1
T_m	the mth Hecke operator	§1.7
T^{T}	the transpose of a matrix T	
v_η	the multiplier system of η	§1.3
W_N	the Fricke involution, $z \mapsto -1/(Nz)$	§1.6
Z_n	the cyclic group of order n	§6.1
δ, ε, ν, σ, κ	signs which can independently take the values 1 and -1	
Γ_1	the modular group	§1.3
$\Gamma_0(N)$	the Hecke congruence group of level N	§1.6
$\Gamma^*(N)$	the Fricke group of level N	§1.6
$\Delta(z)$	the discriminant function	§1.5
η	the Dedekind eta function	§1.1
$\theta(z)$	$= \sum_{n=-\infty}^{\infty} e^{\pi i n^2 z}$, the Jacobi theta function	§1.2
$\Theta_k(\xi, \cdot)$	Hecke theta series of weight k and character ξ on some field	§5.2
$\Theta_k(K, \xi, \cdot)$	theta series as before, indicating the field K	§5.2
$\Theta_k(D, \chi, \cdot)$	Hecke theta series of weight k and character χ on the quadratic number field with discriminant D	§5.5

ξ, ζ	roots of unity, values of characters	
ξ, Ξ	characters on real quadratic fields, often with subscripts and/or constructs, such as ξ^*, $\widetilde{\chi}_{\delta,\varepsilon}$, ...	
$\sigma_l(N)$	sum of the lth powers of the positive divisors of N	§1.5
$\tau(N)$	$= \sigma_0(N)$, the number of positive divisors of N	§1.5
$\tau(n)$	the Ramanujan numbers	§1.5
φ	the Euler function; or (more frequently) a character	§5.5
χ	(sometimes) a Dirichlet character	
χ, ψ, φ, ϕ, ρ	characters on imaginary quadratic fields, often adorned with subcripts and/or constructs, such as $\widetilde{\chi}_{\delta,\varepsilon,\nu}$ or $\widehat{\psi}_\delta$	
ω	$= e(1/6) = \frac{1}{2}(1+\sqrt{-3})$	
$\left(\frac{c}{d}\right)$	the Legendre–Jacobi–Kronecker symbol	§1.1
$[1^{a_1}, 2^{a_2}, \ldots]$	short notation for an eta product $\eta^{a_1}(z)\eta^{a_2}(2z)\cdot\ldots$, frequently written as a fraction in brackets with positive exponents in nominator and denominator	§2.1
$\lfloor x \rfloor$	Gauss bracket, or floor: the largest integer $\le x$	
$\lceil x \rceil$	ceiling: the smallest integer $\ge x$	
$R^\times$	the group of units in a ring R	
μ'	$= a - b\sqrt{d}$, the conjugate of a real quadratic irrational number $\mu = a + b\sqrt{d}$	
$\#B$	the number of elements in a finite set B	

References

[1] I. T. Adamson, *Data Structures and Algorithms: A First Course*, Springer, Berlin, 1996.

[2] S. Ahlgren, Multiplicative relations in powers of Euler's product, *J. Number Theory* **89** (2001), 222–233.

[3] A. Alaca, S. Alaca, M. F. Lamire, K. S. Williams, Nineteen quaternary quadratic forms, *Acta Arith.* **130** (2007), 277–310.

[4] G. E. Andrews, A simple proof of Jacobi's triple product identity, *Proc. Am. Math. Soc.* **16** (1965), 333–334.

[5] T. M. Apostol, *Modular Functions and Dirichlet Series in Number Theory*, Springer, Berlin, 1976.

[6] A. O. L. Atkin, J. Lehner, Hecke operators on $\Gamma_0(m)$, *Math. Ann.* **185** (1970), 134–160.

[7] M. Beck, S. Robins, *Computing the Continuous Discretely*, Springer, Berlin, 2007.

[8] B. C. Berndt, *Ramanujan's Notebooks*, Parts I–V, Springer, Berlin, 1985–1998.

[9] B. C. Berndt, *Number Theory in the Spirit of Ramanujan*, Am. Math. Soc., Providence, 2006.

[10] B. C. Berndt, W. B. Hart, An identity for the Dedekind eta-function involving two independent complex variables, *Bull. Lond. Math. Soc.* **39** (2007), 345–347.

[11] A. J. F. Biagoli, Eta-products which are simultaneous eigenforms of Hecke operators, *Glasg. Math. J.* **35** (1993), 307–323.

[12] F. van der Blij, Binary quadratic forms of discriminant −23, *Koninkl. Nederl. Akad. Wetensch.* **55** (1952), 498–503.

[13] Z. I. Borevich, I. R. Shafarevich, *Number Theory*, Academic Press, San Diego, 1966 (translated from Russian). Deutsche Übersetzung: *Zahlentheorie*, Birkhäuser, Basel, 1966.

G. Köhler, *Eta Products and Theta Series Identities*, Springer Monographs in Mathematics, DOI 10.1007/978-3-642-16152-0,

[14] J. M. Borwein, P. B. Borwein, *Pi and the AGM*, Wiley, New York, 1987.

[15] R. Brandl, One-units in algebraic number fields, *Ric. Mat.* **36** (1987), 271–276.

[16] J. Bruinier, G. van der Geer, G. Harder, D. Zagier, *The 1 – 2 – 3 of Modular Forms. Lectures at a Summer School at Nordfjordeid, Norway*, Springer, Berlin, 2008.

[17] H. C. Chan, From a Ramanujan–Selberg continued fraction to a Jacobian identity, *Proc. Am. Math. Soc.* **137** (2009), 2849–2856.

[18] H. H. Chan, S. Cooper, W.-C. Liaw, On $\eta^3(a\tau)\eta^3(b\tau)$ with $a+b=8$, *J. Aust. Math. Soc.* **84** (2008), 301–313.

[19] H. H. Chan, S. Cooper, P. C. Toh, The 26th power of Dedekind's η-function, *Adv. Math.* **207** (2006), 523–543.

[20] H. H. Chan, M. L. Lang, Ramanujan's modular equations and Atkin–Lehner involutions, *Isr. J. Math.* **103** (1998), 1–16.

[21] R. Chapman, Coefficients of products of powers of eta functions, *Ramanujan J.* **5** (2001), 271–279.

[22] W. Chu, Q. Yan, Verification method for theta function identities via Liouville's theorem, *Arch. Math.* **90** (2008), 331–340.

[23] E. Clader, Y. Kemper, M. Wage, Lacunarity of certain partition-theoretic generating functions, *Proc. Am. Math. Soc.* **137** (2009), 2959–2968.

[24] J. H. Conway, N. J. A. Sloane *Sphere Packings, Lattices and Groups*, Springer, Berlin, 1988.

[25] S. Cooper, S. Gun, B. Ramakrishnan, On the lacunarity of two-eta-products, *Georgian Math. J.* **13** (2006), 659–673.

[26] S. Cooper, M. Hirschhorn, R. Lewis, Powers of Euler's product and related identities, *Ramanujan J.* **4** (2000), 137–155.

[27] D. A. Cox, *Primes of the Form x^2+ny^2: Fermat, Class Field Theory, and Complex Multiplication*, Wiley, New York, 1989, 2nd edn., 1997.

[28] J. T. Cross, The Euler φ-function in the Gaussian integers, *Am. Math. Mon.* **90** (1983), 518–528.

[29] P. Deligne, J.-P. Serre, Formes modulaires de poids 1, *Ann. Sci. Ecole Norm. Super.* **7** (1974), 507–530.

[30] F. Diamond, J. Shurman, *A First Course in Modular Forms*, *Graduate Texts in Math.* **228**, Springer, Berlin, 2005.

[31] D. Dummit, H. Kisilevsky, J. McKay, Multiplicative products of η-functions, in: *Finite Groups—Coming of Age. Contemp. Math.* **45** (1985), 89–98.

[32] E. Ehrhart, Sur un problème diophantienne linéaire II, *J. Reine Angew. Math.* **227** (1967), 25–49.

[33] J. Elstrodt, F. Grunewald, The Petersson scalar product, *Jahresber. Dtsch. Math.-Ver.* **100** (1998), 253–283.

[34] R. Evans, Theta function identities, *J. Math. Anal. Appl.* **147** (1990), 97–121.

[35] J. A. Ewell, A note on a Jacobi identity, *Proc. Am. Math. Soc.* **126** (1998), 421–423.
[36] H. M. Farkas, I. Kra, *Theta Constants, Riemann Surfaces and the Modular Group*, Am. Math. Soc., Providence, 2001.
[37] H. M. Farkas, I. Kra, Identities in the theory of theta constants, in: *In the Tradition of Ahlfors and Bers III. Contemp. Math.* **355** (2004), 231–238.
[38] N. J. Fine, *Basic Hypergeometric Series and Applications*, Am. Math. Soc., Providence, 1988.
[39] D. Goldfeld, J. Hoffstein, On the number of Fourier coefficients that determine a modular form, in: *A Tribute to Emil Grosswald: Number Theory and Related Analysis. Contemp. Math.* **143** (1993), 385–393.
[40] J. R. Goldman, *The Queen of Mathematics. A Historically Motivated Guide to Number Theory*, AK Peters, Wellesley, 1998.
[41] B. Gordon, Some identities in combinatorial analysis, *J. Math. Oxford* **12** (1961), 285–290.
[42] B. Gordon, K. Hughes, Multiplicative properties of eta products II, in: *A Tribute to Emil Grosswald: Number Theory and Related Analysis. Contemp. Math.* **143** (1993), 415–430.
[43] B. Gordon, S. Robins, Lacunarity of Dedekind η-products, *Glasg. Math. J.* **37** (1995), 1–14.
[44] B. Gordon, D. Sinor, Multiplicative properties of η-products, in: *Number Theory. Lecture Notes in Math.* **1395**, Springer, Berlin (1989), 173–200.
[45] E. Grosswald, *Topics from the Theory of Numbers*, Macmillan & Co., London, 1966.
[46] E. Grosswald, *Representation of Integers as Sums of Squares*, Springer, Berlin, 1985.
[47] F. Halter-Koch, Einseinheitengruppen und prime Restklassengruppen in quadratischen Zahlkörpern, *J. Number Theory* **4** (1972), 70–77.
[48] E. Hecke, Eine neue Art von Zetafunktionen und ihre Beziehungen zur Verteilung der Primzahlen. Zweite Mitteilung, *Math. Z.* **6** (1920), 11–51. *Math. Werke* **14**, 249–289.
[49] E. Hecke, *Vorlesungen über die Theorie der algebraischen Zahlen*, Akad. Verlagsgesellschaft, Leipzig, 1923. Reprinted: Chelsea, New York, 1948.
[50] E. Hecke, Über einen Zusammenhang zwischen elliptischen Modulfunktionen und indefiniten quadratischen Formen, *Nachr. Ges. Wiss. Göttingen, Math.-phys. Kl.* (1925), 35–44. *Math. Werke* **22**, 418–427.
[51] E. Hecke, Zur Theorie der elliptischen Modulfunktionen, *Math. Ann.* **97** (1926), 210–242. *Math. Werke* **23**, 428–460.
[52] E. Hecke, Über Modulfunktionen und die Dirichletschen Reihen mit Eulerscher Produktentwicklung I, *Math. Ann.* **114** (1937), 1–28. E. Hecke, Über Modulfunktionen und die Dirichletschen Reihen mit Eulerscher Produktentwicklung II, *Math. Ann.* **114** (1937), 316–351. *Math. Werke* **35**, **36**, 644–707.

[53] E. Hecke, Analytische Arithmetik der positiven quadratischen Formen, *Kgl. Danske Vidensk. Selskab, Math.-fys. Medd.* **17** (1940), 1. *Math. Werke* **41**, 789–918.
[54] E. Hecke, *Lectures on Dirichlet Series, Modular Functions and Quadratic Forms*, Vandenhoeck & Ruprecht, Göttingen, 1983.
[55] Y. Hellegouarch, *Invitation aux mathématiques de Fermat–Wiles*, Masson, Paris, 1997. English translation: Academic Press, San Diego, 2002.
[56] T. Hiramatsu, Theory of automorphic forms of weight 1, in: *Investigations in Number Theory. Advanced Studies in Pure Math.* **13** (1988), 503–584.
[57] T. Hiramatsu, N. Ishii, Y. Mimura, On indefinite modular forms of weight one, *J. Math. Soc. Jpn.* **38** (1986), 67–83.
[58] T. Hiramatsu, Y. Mimura, On numbers of type $x^2 + Ny^2$, *Acta Arith.* **56** (1990), 271–277.
[59] K. Ireland, M. Rosen, *A Classical Introduction to Modern Number Theory*, *Graduate Texts in Math.* **84**, Springer, Berlin, 2nd edn., 1990.
[60] H. Ishii, On the coincidence of L-functions, *Jpn. J. Math.* **12** (1986), 37–44.
[61] H. Iwaniec, *Topics in Classical Automorphic Forms*, *Graduate Stud. in Math.* **17**, Am. Math. Soc., Providence, 1997.
[62] V. G. Kac, Infinite-dimensional algebras, Dedekind's η-function, classical Möbius function and the very strange formula, *Adv. Math.* **30** (1978), 85–136.
[63] V. G. Kac, D. H. Peterson, Infinite-dimensional algebras, theta functions and modular forms, *Adv. Math.* **53** (1984), 125–264.
[64] H. Kahl, *Heckesche Theta-Teilreihen*, Doktor-Dissertation, Würzburg, 1997.
[65] H. Kahl, G. Köhler, Components of Hecke theta series, *J. Math. Anal. Appl.* **232** (1999), 312–331.
[66] G. Kern-Isberner, G. Rosenberger, A note on numbers of the form $x^2 + Ny^2$, *Arch. Math.* **43** (1984), 148–156.
[67] L. J. P. Kilford, Generating spaces of modular forms with η-qoutients, *JP J. Algebra Number Theory Appl.* **8** (2007), 213–226.
[68] A. A. Klyachko, Modular forms and representations of symmetric groups, *J. Sov. Math.* **26** (1984), 1879–1887.
[69] H. Knoche, *The group of one-units in quadratic number fields*, Diplomarbeit, Univ. Würzburg, 2000.
[70] M. I. Knopp, *Modular Functions in Analytic Number Theory*, Markham, Chicago, 1970.
[71] M. I. Knopp, J. Lehner, Gaps in the Fourier series of automorphic forms, in: *Analytic Number Theory. Lecture Notes in Math.* **899** (1981), 360–381.
[72] N. Koblitz, *Introduction to Elliptic Curves and Modular Forms*, Springer, Berlin, 1984.
[73] M. Koecher, A. Krieg, *Elliptische Funktionen und Modulformen*, Springer, Berlin, 1998.

[74] G. Köhler, Observations on Hecke eigenforms on the Hecke groups $G(\sqrt{2})$ and $G(\sqrt{3})$, *Abh. Math. Semin. Univ. Hamb.* **55** (1985), 75–89.

[75] G. Köhler, Theta series on the Hecke groups $G(\sqrt{2})$ and $G(\sqrt{3})$, *Math. Z.* **197** (1988), 69–96.

[76] G. Köhler, Theta series on the theta group, *Abh. Math. Semin. Univ. Hamb.* **58** (1988), 15–45.

[77] G. Köhler, Some eta-identities arising from theta series, *Math. Scand.* **66** (1990), 147–154.

[78] G. Köhler, On two of Liouville's quaternary forms, *Arch. Math.* **54** (1990), 465–473.

[79] G. Köhler, Eta products of weight 1 and level 36, *Arch. Math.* **76** (2001), 202–214.

[80] G. Köhler, Note on an eta identity presented by B. C. Berndt and W. B. Hart, *Bull. Lond. Math. Soc.* **40** (2008), 172–173.

[81] G. Köhler, Analogues to Fermat primes related to Pell's equation, *Arch. Math.* **94** (2010), 49–52.

[82] W. Kohnen, On Hecke eigenvalues and newforms, *Math. Ann.* **329** (2004), 623–628.

[83] M. Koike, On McKay's conjecture, *Nagoya Math. J.* **95** (1984), 85–89.

[84] S. Lang, *Introduction to Modular Forms*, Springer, Berlin, 1976.

[85] J. Lehner, *Discontinuous Groups and Automorphic Functions*, Am. Math. Soc., Providence, 1964.

[86] J. Lepowsky, Macdonald-type identities, *Adv. Math.* **27** (1978), 230–234.

[87] W.-C. W. Li, Newforms and functional equations, *Math. Ann.* **212** (1975), 285–315.

[88] W.-C. W. Li, Diagonalizing modular forms, *J. Algebra* **99** (1986), 210–236.

[89] J. H. van Lint, *Hecke operators and Euler products*, Thesis, Utrecht, 1957. MR **19**, 839.

[90] H. Maass, *Lectures on Modular Functions of one Complex Variable*, Tata, Bombay, 1964. Revised edn., Springer, Berlin, 1983.

[91] I. G. Macdonald, Affine root systems and Dedekind's η-function, *Invent. Math.* **15** (1972), 91–143.

[92] Y. Martin, Multiplicative η-quotients, *Trans. Am. Math. Soc.* **348** (1996), 4825–4856.

[93] Y. Martin, K. Ono, Eta-quotients and elliptic curves, *Proc. Am. Math. Soc.* **125** (1997), 3169–3176.

[94] G. Mersmann, *Holomorphe η-Produkte und nichtverschwindende ganze Modulformen*, Diplomarbeit, Univ. Bonn, 1991.

[95] A. Milas, Characters, supercharacters and Weber modular functions, *J. Reine Angew. Math.* **608** (2007), 35–64.

[96] T. Miyake, *Modular Forms*, Springer, Berlin, 1989.

[97] L. J. Mordell, On Mr. Ramanujan's empirical expansions of modular functions, *Proc. Camb. Philol. Soc.* **19** (1917), 117–124.

[98] C. Moreno, The higher reciprocity laws: An example, *J. Number Theory* **12** (1980), 57–70.

[99] D. Mumford, C. Series, D. Wright, *Indra's Pearls: The Vision of Felix Klein*, Cambridge University Press, Cambridge, 2002.

[100] V. K. Murty, Lacunarity of modular forms, *J. Indian Math. Soc. (N. S.)* **52** (1987), 127–146.

[101] E. Neher, Jacobis Tripelprodukt-Identität und η-Identitäten in der Theorie affiner Lie-Algebren, *Jahresber. Dtsch. Math.-Ver.* **87** (1985), 164–181.

[102] J. Neukirch, *Algebraische Zahlentheorie*, Springer, Berlin, 1992. English translation: *Algebraic Number Theory*, Springer, Berlin, 1999.

[103] M. Newman, Modular forms whose coefficients possess multiplicative properties, *Ann. Math.* **70** (1959), 478–489.

[104] K. Ono, Gordon's ϵ-conjecture on the lacunarity of modular forms, *C. R. Math. Rep. Acad. Sci. Canada* **20** (1998), 103–107.

[105] K. Ono, *The Web of Modularity. Arithmetic of the Coefficients of Modular Forms and q-Series*, Am. Math. Soc., Providence, 2004.

[106] K. Ono, S. Robins, Superlacunary cusp forms, *Proc. Am. Math. Soc.* **123** (1995), 1021–1029.

[107] H. Petersson, Über eine Metrisierung der ganzen Modulformen, *Jahresber. Dtsch. Math.-Ver.* **49** (1939), 49–75.

[108] H. Petersson, Konstruktion der sämtlichen Lösungen einer Riemannschen Funktionalgleichung durch Dirichletreihen mit Eulerscher Produktentwicklung, I, *Math. Ann.* **116** (1939), 401–412. H. Petersson, Konstruktion der sämtlichen Lösungen einer Riemannschen Funktionalgleichung durch Dirichletreihen mit Eulerscher Produktentwicklung, II, *Math. Ann.* **117** (1940), 39–64. H. Petersson, Konstruktion der sämtlichen Lösungen einer Riemannschen Funktionalgleichung durch Dirichletreihen mit Eulerscher Produktentwicklung, III, *Math. Ann.* (1941), 277–300.

[109] H. Petersson, Über Modulfunktionen und Partitionenprobleme, *Abhandl. Dtsch. Akad. Wiss. Berlin, Kl. Math. Allg. Nat.*, 2 (1954), 59 pp.

[110] H. Petersson, *Modulfunktionen und quadratische Formen*, Springer, Berlin, 1982.

[111] H. Petersson, Über gewisse Dirichlet-Reihen mit Eulerscher Produktzerlegung, *Math. Z.* **189** (1985), 273–288.

[112] A. Pizer, Hecke operators for $\Gamma_0(N)$, *J. Algebra* **83** (1983), 39–64.

[113] H. Rademacher, Zur Theorie der Modulfunktionen, *J. Reine Angew. Math.* **167** (1931), 312–336.

[114] H. Rademacher, *Topics in Analytic Number Theory*, Springer, Berlin, 1973.

[115] S. Ramanujan, On certain arithmetical functions, *Trans. Camb. Phil. Soc.* **22** (1916), 159–184. *Collected Math. Papers* **18**, 136–162.

[116] M. Ram Murty, Congruences between modular forms, in: *Analytic Number Theory. Lond. Math. Soc. Lect. Note Ser.* **247** (1997), 309–320.

[117] R. A. Rankin, *Modular Forms and Functions*, Cambridge University Press, Cambridge, 1977.

[118] K. Ribet, Galois representations attached to eigenforms with Nebentypus, in: *Modular Functions of One Variable V. Lecture Notes in Math.* **601** (1977), 17–52.

[119] P. Satgé, Décomposition des nombres premiers dans des extensions non Abéliennes, *Ann. Inst. Fourier* **27**, 4 (1977), 1–8.

[120] S. Scheurich, *Berechnung holomorpher Etaprodukte mittels Algorithmen zu ganzzahligen Punkten in Simplizes*, Diplomarbeit, Univ. Würzburg, 2003.

[121] B. Schoeneberg, Über den Zusammenhang der Eisensteinschen Reihen und Thetareihen mit der Diskriminante der elliptischen Funktionen, *Math. Ann.* **126** (1953), 177–184.

[122] B. Schoeneberg, Über die Diskriminante der elliptischen Funktionen und ihre Quadratwurzel, *Math. Z.* **65** (1956), 16–24.

[123] B. Schoeneberg, Bemerkungen über einige Klassen von Modulformen, *Koninkl. Nederl. Akad. Wetensch.* **70** (1967), 177–182.

[124] B. Schoeneberg, Über das unendliche Produkt $\prod_{k=1}^{\infty}(1-x^k)$, *Mitt. Math. Ges. Hamb.* **IX**(4) (1968), 4–11.

[125] B. Schoeneberg, *Elliptic Modular Functions*, Springer, Berlin, 1974.

[126] J. Sengupta, Distinguishing Hecke eigenforms of primitive cusp forms, *Acta Arith.* **114** (2004), 23–34.

[127] J.-P. Serre, *A Course in Arithmetic*, Springer, Berlin, 1973.

[128] J.-P. Serre, Quelques applications du théorème de densité de Chebotarev, *Publ. Math. Inst. Hautes Etudes Sci.* **54** (1981), 123–201.

[129] J.-P. Serre, Sur la lacunarité des puissances de η, *Glasg. Math. J.* **27** (1985), 203–221.

[130] J.-P. Serre, H. Stark, Modular forms of weight $\frac{1}{2}$, in: *Modular of One Variable VI. Lecture Notes in Math.* **627** (1977), 27–67.

[131] G. Shimura, *Introduction to the Arithmetic Theory of Automorphic Functions*, Princeton University Press, Princeton, 1971.

[132] G. Shimura, On modular forms of half integral weight, *Ann. Math.* **97** (1973), 440–481.

[133] T. Shintani, On certain ray class invariants of real quadratic fields, *J. Math. Soc. Jpn.* **30** (1978), 139–167.

[134] C. L. Siegel, A simple proof of $\eta(-1/\tau) = \eta(\tau)\sqrt{\tau/i}$, *Mathematika* **1** (1954), 4. *Gesammelte Abhandlungen* **62**.

[135] G. V. Voskresenskaya, Multiplicative products of Dedekind's eta function and representations of groups, *Mat. Zametki* **73** (2003), 511–526.

[136] L. C. Washington, *Elliptic Curves: Number Theory and Cryptography*, Chapman & Hall, London, 2003.

[137] H. Weber, *Lehrbuch der Algebra, dritter Band*, Vieweg, Wiesbaden, 1908.

[138] A. Weil, Sur une formule classique, *J. Math. Soc. Jpn.* **20** (1968), 400–402.

[139] E. T. Whittaker, G. N. Watson, *A Course of Modern Analysis*, Cambridge University Press, Cambridge, 4th edn., 1966.

[140] D. B. Zagier, *Zetafunktionen und quadratische Körper*, Springer, Berlin, 1981.

[141] I. J. Zucker, A systematic way of converting infinite series into infinite products, *J. Phys. A, Math. Gen.* **20** (1987), L13–L17.

[142] I. J. Zucker, Further relations amongst infinite series and products: II. The evaluation of three-dimensional lattice sums, *J. Phys. A, Math. Gen.* **23** (1990), 117–132.

Index

G. Köhler, *Eta Products and Theta Series Identities*,
Springer Monographs in Mathematics,
DOI 10.1007/978-3-642-16152-0,

N

O

P

R

S

T

U

W

Z