1. $\mathcal{S}$
2. $3 + 56 - 13 + 8/2$
3. $2 + 3 = 5$
4. $2x = 6$
5. $ax^2 + bx + c = 0$
6. $a \neq 0$
7. $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.
8. $2 \cdot 4$
9. p
10. q
11. r
12. s
13. A
14. X
15. $a \in A$
16. $X = \{x_1, x_2, \ldots, x_n\}$
17. $X = \{x : x \text{ satisfies } \mathcal{P}\}$
18. E
19. $E = \{2, 4, 6, \ldots\}$ or $E = \{x : x \text{ is an even integer and } x > 0\}$.
20. $-3 \notin E$
21. B
22. $A \subset B$
23. $B \supset A$
24. $\mathbb{N} \subset \mathbb{Z} \subset \mathbb{Q} \subset \mathbb{R} \subset \mathbb{C}$.
25. $A \not\subset B$
26. $\emptyset$
27. $A \cup B$
28. $A \cup B = \{x : x \in A \text{ or } x \in B\}$;
29. $A \cap B = \{x : x \in A \text{ and } x \in B\}$.
30. $\bigcup_{i=1}^{n} A_i = A_1 \cup \ldots \cup A_n$
31. $\bigcap_{i=1}^{n} A_i = A_1 \cap \ldots \cap A_n$
32. O
33. U

34. A'
35. $A \setminus B = A \cap B' = \{x : x \in A \text{ and } x \notin B\}$.
36. $A = \{x \in \mathbb{R} : 0 < x \leq 3\} \quad \text{and} \quad B = \{x \in \mathbb{R} : 2 \leq x < 4\}$.
37. C
38. $A \cup (B \cup C) = (A \cup B) \cup C$
39. $A \times B$
40. $A = \{x, y\}$
41. $A_1 \times \cdots \times A_n = \{(a_1, \ldots, a_n) : a_i \in A_i \text{ for } i = 1, \ldots, n\}$.
42. $f \subset A \times B$
43. $f : A \to B$
44. $f : a \mapsto b$
45. g
46. $(g \circ f)(x) = g(f(x))$
47. $A = \begin{pmatrix} a & b \\ c & d \end{pmatrix}$,
48. $T_A : \mathbb{R}^2 \to \mathbb{R}^2$
49. $\mathbb{R}^m$
50. $S = \{1, 2, 3\}$
51. $\pi : S \to S$
52. $h : C \to D$
53. $f(x) = \ln x$
54. $f^{-1}(x) = e^x$
55. $R \subset X \times X$
56. $(y, z) \in R$
57. $x \sim y$
58. $\equiv$
59. $\cong$
60. $r/s \sim t/u$
61. P
62. I
63. Q
64. $X_i \cap X_j = \emptyset$
65. $\bigcup_k X_k = X$

66. $[x] = \{y \in X : y \sim x\}$
67. $r \equiv s \pmod{n}$
68. l
69. $f(x) = \sin x$
70. $f : X \to Y$
71. $x \geq y$
72. $|x - y| \leq 4$
73. λ
74. $\mathbb{P}(\mathbb{R})$
75. $300!$
76. $(a+b)^n = \sum_{k=0}^{n} \binom{n}{k} a^k b^{n-k}$,
77. $a \mid b$
78. $d = \gcd(a, b)$
79. $\lim_{n\to\infty} f_n/f_{n+1} = (\sqrt{5} - 1)/2$
80. $\operatorname{lcm}(a, b)$
81. N
82. $\triangle ABC$
83. $\mu_1 \rho_1$
84. α
85. β
86. $\alpha\beta = \mathrm{id}$
87. G
88. $\mathbb{M}_2(\mathbb{R})$
89. $GL_2(\mathbb{R})$
90. $\det A = ad - bc \neq 0$
91. $I^2 = J^2 = K^2 = -1$
92. $\mathbb{C}^*$
93. g''
94. $g^n = \underbrace{g \cdot g \cdots g}_{n \text{ times}}$
95. H
96. $\sigma = \begin{pmatrix} 1 & 2 & \cdots & n \\ a_1 & a_2 & \cdots & a_n \end{pmatrix}$
97. $\mathbb{T} = \{z \in \mathbb{C}^* : |z| = 1\}$

98. $\begin{pmatrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{pmatrix}$,

99. $H = \left\{ \begin{pmatrix} a & b \\ c & d \end{pmatrix} : a + d = 0 \right\}$.

100. $Z(G) = \{x \in G : gx = xg \text{ for all } g \in G\}$

101. $(d_1, d_2, \ldots, d_k) \cdot (w_1, w_2, \ldots, w_k) \equiv 0 \pmod{n}$

102. $\langle a \rangle = \{a^k : k \in \mathbb{Z}\}$

103. $\overline{z} = a - bi$

104. $r \operatorname{cis} \theta$

105. $\theta = \arctan\left(\frac{b}{a}\right) = \arctan(-1) = 315°$,

106. $w = s \operatorname{cis} \phi$

107.
$\circ$	id	σ	τ	μ
id	id	σ	τ	μ
σ	σ	id	μ	τ
τ	τ	μ	id	σ
μ	μ	τ	σ	id

108. $\sigma(a_i) = a_{(i \bmod k)+1}$

109. $\sigma_i(x) = \begin{cases} \sigma(x) & x \in X_i \\ x & x \notin X_i \end{cases}$,

110. $\mathcal{O}_{x,\sigma} = \{y : x \sim y\}$.

111. $\mathcal{L}_H$

112. $\mathcal{R}_H$

113. $p \nmid a$

114. γ

115. $\mathbf{p} = \begin{pmatrix} p_1 \\ p_2 \end{pmatrix}$.

116. $f(\mathbf{p}) = A\mathbf{p} + \mathbf{b}$,

117. $(0.999)^{10,000} \approx 0.00005$.

118. $\mathbf{x} = (x_1, \ldots, x_n)$

119. $\mathbf{y} = (y_1, \ldots, y_n)$

120. $d_{\min}$

121. $\mathbf{z} = (00011)$

122. $\mathbf{c}_1 = (00000)$

123. $\text{Null}(H)$

124. $\begin{pmatrix} a_{11} & a_{12} & \cdots & a_{1,n-m} \\ a_{21} & a_{22} & \cdots & a_{2,n-m} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & \cdots & a_{m,n-m} \end{pmatrix}$

125. (000000) (001101) (010110) (011011)
(100011) (101110) (110101) (111000).

126. $\delta_{ij} = \begin{cases} 1 & i = j \\ 0 & i \neq j \end{cases}$

127. $H\mathbf{e}_i$

128. $\mathbf{r}$

129. $H = \begin{bmatrix} 0 & 1 & 0 & 1 & 0 \\ 1 & 1 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 & 1 \end{bmatrix}$

130. $C^\perp = \{\mathbf{x} \in \mathbb{Z}_2^n : \mathbf{x} \cdot \mathbf{y} = 0 \text{ for all } \mathbf{y} \in C\}$.

131. ψ

132. $\prod_{i=1}^{n} G_i = G_1 \times G_2 \times \cdots \times G_n$

133. $\omega = \operatorname{cis}(2\pi/n)$

134. $\operatorname{Aut}(G)$

135. $\operatorname{Inn}(G)$

136. $\Rightarrow$

137. $i_g : G \to G$

138. $\ker \phi$

139. $\eta : G/K \to \psi(G)$

140. $\|\mathbf{x}\| = \sqrt{\langle \mathbf{x}, \mathbf{x} \rangle} = \sqrt{x_1^2 + \cdots + x_n^2}$.

141. $\mathbf{w}$

142. $\mathbf{a}_j = \begin{pmatrix} a_{1j} \\ a_{2j} \\ \vdots \\ a_{nj} \end{pmatrix}$

143. ℓ

144. $Z_3 \rtimes Z_4$

145. $v \in \mathbb{R}^2$

146. $Y = \{B, W\}$

147. $\widetilde{\sigma}$

148. $q \not\equiv 1 \pmod{p}$

149. $1 = \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}, \quad \mathbf{i} = \begin{pmatrix} 0 & 1 \\ -1 & 0 \end{pmatrix}, \quad \mathbf{j} = \begin{pmatrix} 0 & i \\ i & 0 \end{pmatrix}, \quad \mathbf{k} = \begin{pmatrix} i & 0 \\ 0 & -i \end{pmatrix},$

150. $\mathbb{H}$

151. $F = \left\{ \begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}, \begin{pmatrix} 1 & 1 \\ 1 & 0 \end{pmatrix}, \begin{pmatrix} 0 & 1 \\ 1 & 1 \end{pmatrix}, \begin{pmatrix} 0 & 0 \\ 0 & 0 \end{pmatrix} \right\}$

152. $\operatorname{char} R$

153. M

154. $\deg f(x) = n$

155. $F[x]$

156. $\Phi_n(x) = \frac{x^n - 1}{x - 1} = x^{n-1} + x^{n-2} + \cdots + x + 1$

157. $\deg(p(x) + q(x)) \leq \max(\deg p(x), \deg q(x))$

158. $\Delta = b^2 - 4ac$

159. $\nu : \mathbb{Z}[\sqrt{3}\, i] \to \mathbb{N} \cup \{0\}$

160. $a \preceq b$

161. $a \vee b$

162. $a \wedge b$

163. $\succeq$

164. $b \not\preceq c$

165. $(\Leftarrow)$

166. $'$

167. V

168. $\dim V = n$

169. $S = \{\mathbf{u}\}$

170. $W = U \oplus V$

171. $\operatorname{Hom}(V, W)$

172.
$$\begin{array}{ccc} E[x]/\langle p(x) \rangle & \xrightarrow{\psi} & F[x]/\langle q(x) \rangle \\ \downarrow{\scriptstyle \sigma} & & \downarrow{\scriptstyle \tau} \\ E(\alpha) & \xrightarrow{\overline{\phi}} & F(\beta) \\ \downarrow & & \downarrow \\ E & \xrightarrow{\phi} & F \end{array}$$

173. $\triangle ABC$

174. $\mathrm{GF}(p^n)$

175.
$$\begin{array}{ccc} E & \longrightarrow & \{\mathrm{id}\} \\ \uparrow & & \downarrow \\ L & \longrightarrow & G(E/L) \\ \uparrow & & \downarrow \\ K & \longrightarrow & G(E/K) \\ \uparrow & & \downarrow \\ F & \longrightarrow & G(E/F) \end{array}$$

176. ζ

177. $K \supseteq E$