Modular form

3. discriminant

① meromorphic MF
② almost holomorphic MF
④ smooth Automorphic form

⑥ Siegel MF
⑦ Hilbert MF

⑨ MF of congruence subgp
④ half-integral weight MF

Def. A holo fct $f: \mathcal{H} \longrightarrow \mathbb{C}$ is called a modular form of weight $k \in \mathbb{Z}$, level $\Gamma := SL_2(\mathbb{Z})$, if

1) $f(\gamma\tau) = (c\tau+d)^k f(\tau)$ → ② quasi modular form
$\forall \gamma = \begin{pmatrix} a & b \\ c & d \end{pmatrix} \in \Gamma$

e.g. $f(\tau+1) = f(\tau)$

2) Write $f(\tau) = \sum_{n \in \mathbb{Z}} a_n (e^{2\pi i \tau})^n$, then $a_n = 0$ for $n < 0$

↳ ⑧ p-adic MF

↳ ① non-entire MF

⑦ The order I plan to talk about
(For me they become more and more difficult)