Model for $X_0(12)$

Parameter:

$$t_{12} = \frac{(\eta_1)^2(\eta_4(\eta_6))^2}{(\eta_2)^2(\eta_3(\eta_{12}))^3} \quad (t_{12}) = (0) - (\infty)$$

Cusps and Coordinates of Cusps:

(0): a 12-gon with $t_{12}(0) = 0$;
(1/2): a 6-gon with $t_{12}(1/2) = -6$;
(1/3): a 4-gon with $t_{12}(1/3) = -4$;
(1/4): a 3-gon with $t_{12}(1/4) = -3$;
(1/6): a 2-gon with $t_{12}(1/6) = -2$;
($\infty$): the 1-gon with $t_{12}(\infty) = \infty$;

Moduli-Theoretic Maps:

$$\pi_1 : X_0(12) \rightarrow X_0(4)$$

$$\pi_1^*(t_4) = \frac{t_{12}^4(t_{12} + 4)}{(t_{12} + 3)^3}$$

$$\pi_3 : X_0(12) \rightarrow X_0(4)$$

$$\pi_3^*(t_4) = \frac{t_{12}(t_{12} + 4)^3}{(t_{12} + 3)}$$

$$\pi_1 : X_0(12) \rightarrow X_0(6)$$

$$\pi_1^*(t_6) = \frac{t_{12}^7}{(t_{12} + 2)}$$

$$\pi_2 : X_0(12) \rightarrow X_0(6)$$

$$\pi_2^*(t_6) = t_{12}(t_{12} + 6)$$
Atkin-Lehner Involutions:

\[ w_3 : X_0(12) \rightarrow X_0(12) \]
\[ w_3^\ast(t_{12}) = \frac{-3(t_{12} + 4)}{(t_{12} + 3)} \]

\[ w_4 : X_0(12) \rightarrow X_0(12) \]
\[ w_4^\ast(t_{12}) = \frac{-4(t_{12} + 3)}{(t_{12} + 4)} \]

\[ w_{12} : X_0(12) \rightarrow X_0(12) \]
\[ w_{12}^\ast(t_{12}) = \frac{12}{t_{12}} \]