Topics in Algebra(Sample Quiz)

Date: May 1, 2019.
Name:

Let $N = 11$. The genus of $X_1(N)$ is one.

1. List representatives for the orbits of $\Gamma_1(N)$ acting on $\mathbb{P}^1(\mathbb{Q})$.

2. Among the representatives listed above, determine which one is equivalent to $\frac{8}{9}$.

3. Compute the dimensions of $H^1_{\mathrm{cusp}}(\Gamma_1(N), L_{k-2}(\mathbb{Q}))$ for $k = 2, 4$.

	0	1	2	3	4	5	6	7	8	9	10
0											
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											

You may use http://cmfs.lmfdb.xyz to check your answer. Note that they display dimensions over $\mathbb{C}$.