EXERCISE 1
MODULAR FORMS 2019
DUE DATE: MARCH 17, 2019

Exercise 1. *Express the matrix* $\begin{pmatrix} -5 & -11 \\ 1 & 2 \end{pmatrix}$ *as a word in the generators* $S = \begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$ *and* $T = \begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$.

Exercise 2. *Find the class number* $h(D)$ *and all reduced forms of discriminant* D *for all discriminants* $-12 \leq D < -4$.

Exercise 3. *Decide which of the following forms are equivalent:*

$$[6, 12, 7], \quad [3, 6, 5], \quad [5, 14, 11].$$

Exercise 4. *Show that if* $D = 1 - 4q$, $q > 1$, *and* $h(D) = 1$ *then* q *is prime.*