1. Use a quadratic form to compute continued fractions for the following pairs of numbers (see pages 20-21 of Chapter 2 for examples like these):

(a) $(3+\sqrt{6})/2$ and $(3-\sqrt{6})/2$ (b) $(11+\sqrt{13})/6$ and $(11-\sqrt{13})/6$

(c) $(14+\sqrt{7})/9$ and $(14-\sqrt{7})/9$

2. For the quadratic form x^2-14y^2 do the following things:

(a) Draw the separator line in the topograph and compute the continued fraction for $\sqrt{14}$.

(b) Find the smallest positive integer solutions of $x^2-14y^2=1$ and $x^2-14y^2=-1$, if these equations have integer solutions.

(c) Find the linear fractional transformation that gives the periodicity translation along the separator line and use this to find a second positive solution of $x^2-14y^2=1$.

(d) Determine the integers n with $|n|\le 12$ such that the equation $x^2-14y^2=n$ has an integer solution. (Don't forget the possibility that there could be solutions (x,y) that aren't primitive.)

3. For the quadratic form x^2-29y^2 do the following things:

(a) Draw the separator line and compute the continued fraction for $\sqrt{29}$.

(b) Find the smallest positive integer solution of $x^2-29y^2=-1$.

(c) Find a glide-reflection symmetry of the separator line and use this to find the smallest positive integer solution of $x^2-29y^2=1$.

4. Compute the periodic separator line for the form x^2-43y^2 and use this to find the continued fraction for $\sqrt{43}$.