Worksheet 9

1. Find the least positive solution of $x^2 - 29y^2 = -1$ (if any) and $x^2 - 29y^2 = 1$. Given $\sqrt{29} =< 5, \dot{2}, \dot{1}, \dot{1}, \dot{2}, \dot{10} >$

2. Find the least positive solution of $x^2 - 61y^2 = -1$ (if any) and $x^2 - 61y^2 = 1$. Given $\sqrt{61} =< 7, \dot{1}, \dot{4}, \dot{3}, \dot{1}, \dot{2}, \dot{2}, \dot{1}, \dot{3}, \dot{4}, \dot{1}, \dot{14} >$

3. Prove that $x^2 - dy^2 = -1$ has no solution if $d \equiv 3 \mod 4$.