Factorization of N N'odd N= 2^R N N is either =1 (mod 4) an = 3 (mod 4) 1) To N' = 1 (moda) N = 3 (mod4) $\Delta = N'$ D = 9N) b= 2 [[] +1 b - 2/[[] Define $Q(x_{iy}) = x^2 + bxy + (b^2 A) y^2$ Define i = 22) Apply reduction operator to a $Q := P(Q) = Ax^2 + Bxy + Cy^2$ 3) Hi is odd or i is even of Cis not a square then i= iM, 90 to 2

4) The is even & Cisa square then Towerse Square (ont $G(x,y) := -A \int_{C} x^{2} Bxy - \int_{C} y^{2}$ B)= B & G(x1y) - A(G) Hobis Still equal tob, goto skp6 else go to skp6 6) Dubrut ICI on ICI (is even) Reduction Operator $Q(x,y) = Ax^2 + Bxy + Cy^2 \left(AC \neq 0\right)$ $\mathcal{J}(Q) = (x^2 + (-B + 2nC) x y)$ $- - - - - + (n^2C - mB + A) y$ $n = - \left[-(A + B) \right]$ $n = \left[\frac{b + \sqrt{A}}{2C} \right]$

P(Q) is equivalent to Q. Triverse square 1007 operator $Q(x_1y)$ - Ax^2 - Bxy - C^2xy $Q'(x,y) = -A \cdot C \times^2 - B \times y - C \times y$ R' need not be equivalent to Q. but $\Delta(Q') = \Delta(Q)$

N= 1111) = 3 (mod4)

$$\Delta = 44444$$
 $b = 210$

1)

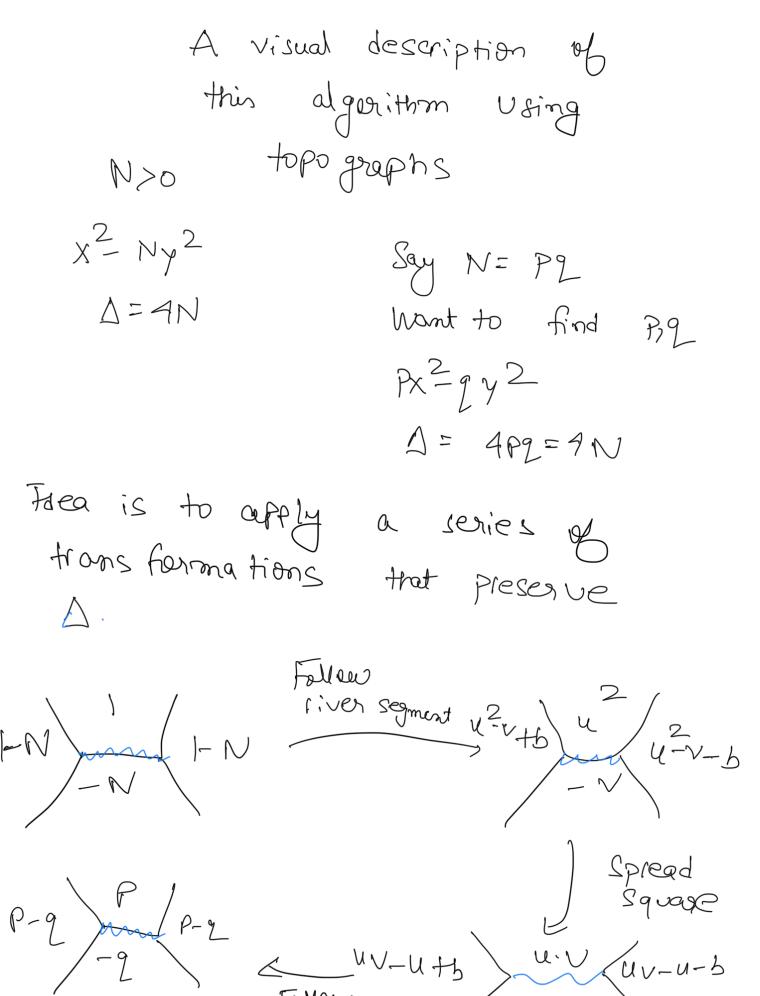
 $Q(x,y) = x^2 + 210 xy - 86 y^2$

Short hand $(1,210, -86)$

2) $(1,210, -86) \rightarrow (-86,134,77)$
 $(-46,194,37) \leftarrow (77,174,-46)$
 $(37,176,-91) \rightarrow (-91,188,25)$

3) In verse caver (not $(-91,188,25) \rightarrow (-91,5,-188,-5)$

 $(-91.5, -188, -5) \rightarrow (-5, 208, 59)$ (-98, 50, 107) (-98, 50, 107)(107, 164, -41) < Take a of second 1981- form (-41, 164, 107) 11)11 = 41x 27) Apply algorithm to this again (or maybe this is) already a prime?



river segment