HOMEWORK III (due to april 9)
BRAIDS AND SEIFERT SURFACES

Please, give your solution to each problem on a separate page. Do not forget to write your name and student's number on every page that you submit

Problem 1. *Find a braid b whose closure, $\hat{b}$, presents*

1. *Borromean rings,*
2. *the twisted Whitehead double W_2^+*

Write b as a product of the generators σ_i and σ_i^{-1}.

Problem 2.

1. *Sketch an oriented span for the Whitehead link, L. (***Hint:*** You may find a suitable diagram for the Whitehead link in the solution to Problem 2.4 in Prasolov's book.)*
2. *Find the corresponding Seifert matrix.*
3. *Find the genus of this Seifert surface.*
4. *Find the signature, $\sigma(L)$.*

Problem 3. *For the knots $K_1 = K^+_{2,3} \# K^+_{2,3}$ and $K_2 = K^+_{2,3} \# K^-_{2,3}$, determine*

1. *the Arf invariants,*
2. *the Alexander polynomials,*
3. *the signature.*