

8 From previous problems, we know that r is transversal to X if and only if the unit direction vector of r , call it \hat{r} , is a regular value for u . Then \hat{r} is a regular value of both u_0 and u_1 associated to z_0 and z_1 , respectively. Note $\text{card}(u_0^{-1}(\{\hat{r}\})) = \text{card}(u_1^{-1}(\{\hat{r}\})) + \ell$ (this is what it means for r to intersect X ℓ times in between the points), and since $\text{deg}_2(u) = \text{card}(u^{-1}(\{v\})) \pmod{2}$ if v is a regular value (as \hat{r} is), we get that $\text{deg}_2(u_0) = \text{deg}_2(u_1) + \ell \pmod{2}$, so $W_2(X, z_0) = W_2(X, z_1) + \ell \pmod{2}$, as desired.