

## §8. Example 2

### Euler characteristic formula

$f: M^2 \rightarrow \mathbb{R}$  stable Morse fct.  
 $\uparrow$   
 closed surface

$\chi(M^2) \equiv \# \text{ of critical pts of } f \pmod{2}$   
 Euler char. (mod 2)

$$= |\tilde{I}_0^0(f)| + |\tilde{I}_e^0(f)| + |\tilde{I}_0^1(f)| + |\tilde{I}_e^1(f)| \\ + |\tilde{I}_0^2(f)| + |\tilde{I}_e^2(f)|$$

$$\bullet \tilde{I}_*^0 \quad \infty \tilde{I}_*^1 \quad \infty \tilde{I}_*^2$$

On the other hand,

$$\delta_0(\tilde{O}_0) = \tilde{I}_0^0 + \tilde{I}_e^0 + \tilde{I}_0^1 + \tilde{I}_e^1$$

$$\Rightarrow |\tilde{I}_0^0(f)| + |\tilde{I}_e^0(f)| + |\tilde{I}_0^1(f)| + |\tilde{I}_e^1(f)| \\ \equiv 0 \pmod{2}$$