3) let (C, D, E) be a coalgebra P: C\*&C\* -> (C&C)\* is the conversed isomorphisms hence, p\*: C&C -> (C\*&C\*)\* is an isomorphism,  $\langle m(moid) x, c \rangle = \langle \Delta^* p(moid) x, c \rangle = \langle (moid) x, p^* \Delta c \rangle$ =  $\langle x, (m^* \otimes rd^*) p^* \Delta c \rangle = \langle x, (p^* \Delta \otimes id) p^* \Delta c \rangle =$ (x, (vdpp d) p dc) = ((vd @ m)x, p dc) = (m(vdom)x,c) as p\* 1 is "coassociative" because pt is an isomorphism and I is coassociative now we take u := E\*: K -> C\*, relt, xec\* (m (usid) rex, c) = (usud(rec), pac) = (rex, (u\* ord\*) p\* dc) = (rex, (E ord\*) p\* dc) =  $\langle r \otimes \chi, I_c \rangle = \langle I^*(r \otimes \chi), c \rangle$ I: C > K & C is the ceronical isomorphism buena I' (IKOC) C\* is the caronical Bonophism checking the right scale of the commutativity of the

unit diagram is analogous.