

# Group cohomology, low cases

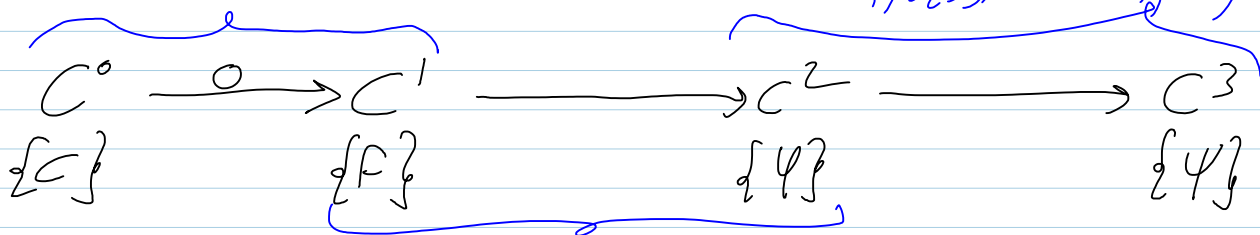
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in the module  $C=M$   
case, this is

$$F(g) = gm - m, \text{ so}$$

$H^0 = \{ \text{invariants} \}$

$$\begin{aligned} \psi \mapsto \psi(g_1, g_2, g_3) = \\ g_1 \psi(g_2, g_3) - \psi(g, g_2, g_3) \\ + \psi(g_1, g_2, g_3) - \psi(g, g_2) \end{aligned}$$



$$\begin{aligned} F \mapsto \psi(g_1, g_2) = \\ g_1 f(g_2) - f(g, g_2) + f(g_1) \end{aligned}$$

In the "trivial action" case,

$$B^1 = 0 \quad Z^1 = \text{characters (additive)} \quad H^1 = \text{additive characters}$$

$$0 \longrightarrow \mathbb{K} \longrightarrow \hat{G} \longrightarrow G \longrightarrow 0$$

$\parallel$   
 $\mathbb{K} \times G$

$$(c_1, g_1) \cdot (c_2, g_2) = (c_1 + c_2 + \psi(g_1, g_2), g_1, g_2)$$

Associativity implies:  $(g_1, g_2) g_3 = g_1 (g_2, g_3)$

$$\psi(g_1, g_2) + \psi(g_1, g_2, g_3) = \psi(g_2, g_3) + \psi(g_1, g_2, g_3),$$

which agrees w/ the above.