

QUIZ 3

- (1) **(3 points)** Let G be a group with a (finite) even number of elements. Show that G contains a non-identity element g with $g^2 = 1_G$ (hint: how many non-identity elements of G are there?).
- (2) **(2 points)** Show by brute force the claim made in class that there are exactly two groups (up to isomorphism) of order four (the result from the first problem may be useful).
- (3) **(5 points)** Give a concrete explicit examples of each group from problem 2.