

Homework 9

MATH 301

Due Wednesday, November 30, 2023

Instructions. Read the [Homework Guide](#) to make sure you understand how to successfully complete the assignment. All claims must be sufficiently justified.

Definition 1. See Example 3.15 (in [Section 3.2](#)) for the definition of the *quaternion group* Q_8 . (You will need this group in several exercises below.)

Exercise 1. Complete the following exercises from [Section 9.4](#):

*11, 17, 19 (just the first part, and see Example 9.25), 22, 24, 25, 48, **55

Exercise 2. Suppose G is the internal direct products of the subgroups H and K . Prove that G isomorphic to $H \times K$.

Exercise 3. Complete the following exercises from [Section 10.4](#):

1, *2, 3, 4, 5, 10, *11