Math 3140: Homework 10

Due: Wednesday, November 28

(1) For $G = D_3 \times \mathbb{Z}_2$,

    (a) Find all the normal subgroups $N \triangleleft G$,

    (b) Find all the conjugacy classes,

    (c) Find all the quotient groups G/N (identify the groups up to isomorphism).

17.4 Let G act on a set X, and let O be an orbit in G. Show that $G_x = G_y$ for all $x, y \in O$ if and only if $G_x \triangleleft G$.