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4.

- (a) Give an example of a cyclic subgroup of D_4 of order 4. No proof is necessary.

$$\langle \rho \rangle = \{ \text{id}, \rho, \rho^2, \rho^3 \}$$

- (b) Give an example of a subgroup of D_4 of order 4 which is not cyclic. No proof is necessary.

$$\{ \text{id}, \rho^2, \sigma, \sigma\rho^2 \}$$