

**ABSTRACT ALGEBRA, MATH 520
HOMEWORK 9**

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- (1) Let $H \subseteq F(4)$ be the subgroup generated by

$$y_1 = 9x_1 + 2x_2 + 5x_3 + 6x_4$$

$$y_2 = 4x_1 + 3x_2 + 2x_3 + 8x_4$$

Determine what $F(4)/H$ as a direct sum of cyclic groups.

- (2) Let $H \subseteq F(3)$ be the subgroup generated by

$$y_1 = 9x_1 + 12x_2 + 15x_3$$

$$y_2 = 6x_1 + 3x_2 + 9x_3$$

$$y_3 = 21x_1 + 12x_2 + 18x_3$$

Determine what $F(3)/H$ as a direct sum of cyclic groups.

- (3) Dummit and Foote 5.5 1
- (4) Dummit and Foote 5.5 2
- (5) Dummit and Foote 5.5 6
- (6) Dummit and Foote 5.5 8