Math 4410 Discussion questions, Oct. 25, 2019

(1) Consider the following three posets.
- $P_1 = (\mathbb{Z}^{>0}, \leq_1)$, where $\leq_1$ denotes divides. So in this poset $3 \leq_1 6$, but $3 \not\leq_1 7$.
- $P_2 = (\mathcal{M}, \leq_2$ where $\mathcal{M}$ is monomials in infinitely many variables $\{x_1, x_2, x_3, \dots\}$, and $\leq_2$ is divides. So in this poset $x_1^3 x_5^2 \leq x_1^3 x_3 x_5^7$.
- $P_3 = (\mathcal{FNZ}, \leq_3)$ where $\mathcal{FNZ}$ is finitely nonzero sequences with values in $\mathbb{Z}^{\leq 0}$ and $(a_1, a_2, a_3, \dots) \leq (b_1, b_2, b_3, \dots)$ if and only if $a_i \leq b_i$ for all i.

Which, if any, pairs of posets are isomorphic?

(2) Problem 6A of the text.

(3) Let $\mathcal{S}$ be the symmetric chain covering of B_n in the text (and class). For $i \leq n/2$ how many chains in the covering does the minimal subset have cardinality i? For instance, for any n and $i = 0$ the answer is one. For $n = 3$ and $i = 1$ the answer is two.