Homework: 3M

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Math 113: Discrete Structures

Due September 14th, 2020

Problem 1

a.

What is the total number of films you own directed by either Herzog, Wachowski, or Jodorowsky?

b.

If you were to set up a movie night with your friends and you wanted to watch one Herzog, one Wachowski, and one Jodorowsky, how many different movie nights are possible, not caring about the order watched?

c.

If you were to set up a movie night with your friends and you wanted to watch one Herzog, one Wachowski, and one Jodorowsky, how many different movie nights are possible, caring about the order watched?

Problem 2

For each number we can choose it x number of times where x is p^x and p is a prime. We also have the choice of not choosing the number at all. Thus for all prime factors each contributes $(x + 1)$. Using the multiplicative counting principal we see,

$$(3 + 1)(2 + 1)(2 + 1)(1 + 1) = 4 \cdot 3 \cdot 3 \cdot 2 = 72.$$

Hence, there are 72 positive integers that divide $169,400$