Problem of the Week Contest

Spring 2019, Number 2

Department of Mathematics, Gettysburg College

Posted: Friday, February 1.

Solutions Due: Friday, February 8, 5:00 p.m..

Send solutions to bkennedy@gettysburg.edu or put solutions in the marked envelope in the hallway outside Glatfelter 215.

The contest is open to all Gettysburg College students. Up to three people may work together on a submission. Make sure your name is on your submission and that any sources are properly cited!

Feeding Time!

Every night I feed my pet walrus exactly one of the following for dinner: fish, pizza, or tacos. My walrus loves pizza and tacos, but fish are better for him, so I adhere to the following rule: if I feed my walrus something other than fish on any particular night, I will feed him fish the following night. (If I feed my walrus fish on any particular night, I can give him anything the following night).

According to the above rule, then, the following is a valid “10-night menu”:


The following is not a valid “10-night menu”:


QUESTIONS. How many valid 10-night menus are there? If \( n \) is a positive whole number, how many valid \( n \)-night menus are there?

If you’re feeling adventurous, generalize to the case where there are \( \kappa \) “unhealthy” options (that is, \( \kappa \) things other than fish that I might feed my walrus).