# ECE 341 - Homework #3

Dice Games and z-Transform - Summer 2023

## Farkle (6 dice)

In the game of Farkle, you initially roll six dice

1) Compute using combinatorics the odds of rolling two tripples when rolling 6 dice one time

   dice = xxx yyy


2) Compute using combinatorics the odds of rolling two-pair when rolling 6 dice one time

   dice = xx yy ab


3) Compute using combinatorics the odds of rolling three pairs when rolling 6 dice one time

   dice = xx yy zz


4) Write a Matlab program which computes the number of ways to roll six dice and
   - Get two tripples
   - Get two pair, and
   - Get three pairs

Compare your answers to what you computed using combinatorics


## z-Transforms

Find the inverse z-transform

5) $X = \left( \dfrac{0.001z(z+1)^2}{(z-0.99)(z-0.96)(z-0.95)} \right)$


6) $X = \left( \dfrac{0.001z(z+1)^2}{(z-1)(z-0.99)(z-0.96)} \right)$


7) A new Volkswagen ID.4 costs \$49,441 from Cars.com. If you take out a 60-month loan at 7.66% interest, what is your monthly payment? Solve using z-transforms.