

## Projects

- Project 1.** *The Dowry problem*: (Problem 47 in [Mos87]).
- Project 2.** *Euler's pentagonal theorem*: (Theorem 4 in [AE04]).
- Project 3.** *Generating function of Catalan's numbers*: (Proposition 1.3.1 in [Sta15]).
- Project 4.** *Egg dropping numbers*: ([Boa04]).
- Project 5.** *Eigenvalues and walks on graphs*: (Chapter 1 of [BH12]).
- Project 6.** *Matrix Tree theorem*: (Chapter 4 of [Bap14]).
- Project 7.** *Chromatic polynomial*: (Chapter 1 of [BS18]).
- Project 8.** *Euler's formula and its applications*: ([Ric19]).
- Project 9.** *Sperner's lemma*: (Chapter 4 of [Sha91]).
- Project 10.** *Game of Hex*: (Chapter 9 of [DK16]).
- Project 11.** *Bernoulli numbers and sum of powers*: (Chapter 2.2 of [You92]).
- Project 12.** *Eulerian numbers*: (Chapter 1 of [Pet15]).
- Project 13.** *Josephus problem*: (Chapter 1 of [GKP94]).
- Project 14.** *Unravelling Knots*: (Chapter 5 of [Pra00]).
- Project 15.** *Arrow's theorem in Voting theory*: (Chapter 4 of [HK18]).

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