

Math-Circle: Session 1

TIFR-CAM and ICTS

October 24, 2022

Problem 5. Imagine that 4 spiders are sitting on corners of a square of side length d all facing the centre of the square. Each spider wants to eat the spider to its right and moves towards it with uniform velocity v . Will the spiders be able to catch their prey? If yes, how long will it take for them to meet? What will be the trajectory of each spider?

Can you generalise this problem by replacing the square with a regular polygon? What happens as the number of sides gets larger without limit?