

## Bonus Question 6

1. A picture is taken of a bicycle wheel while the bicycle is in motion. Some spokes of the wheel appear fuzzier than others. Explain.
2. Four spiders are located at the vertices of a square. The spider in the first vertex is crawling directly towards the spider of the second vertex; the second crawling towards the third, the third towards the fourth and the fourth towards the first. They are all crawling with a constant speed. Will they ever reach the center of the square? If yes, then how long will it take them, and how many revolutions will they make before reaching the center?
3. A roll of toilet paper is placed on the floor against the wall and is slowly being unrolled. A pencil is stuck at the center of the roll and is tracing a curve on the wall. Is the resulting curve convex, concave, or neither? Find the equation of this curve. You may assume that both the paper and pencil are very thin.