Create an well documented notebook and using python solve the following, share the code using GitHub link

- Find the approximate change in the value of $\frac{1}{x^2}$ when x changes from 2 to 100

- Rishi has a total of ` 590 as currency notes in the denominations of` 50, ` 20 and ` 10. The ratio of the number of ` 50 notes and ` 20 notes is 3:5. If she has a total of 25 notes, how many notes of each denomination she has?

- The organizers of an essay competition decide that a winner in the competition gets a prize of ` 100 and a participant who does not win gets a prize of ` 25. The total prize money distributed is ` 3,000. Find the number of winners, if the total number of participants is 63.

- The sum of three consecutive multiples of 11 is 363. Find these multiples.

- The digits of a two-digit number differ by 3. If the digits are interchanged, and the resulting number is added to the original number, we get 143. What can be the original number?

- Solve $5x - 2(2x - 7) = 2(3x - 1) + \frac{7}{2}$
- Find the area of the region included between the parabola $y^2 = x$ and the line $x + y = 2$ and the X-axis.

- A manufacturer produces three models of toys in the form of bikes say X,Y and Z . Model X takes as 10 man-hour to make per unit, Model Y takes 5 man-hour per unit and model Z takes 4 man-hour per unit. There are a total 212 man-hour available per
- week. Handling and marketing costs are <20, <30 and <40 per unit for models X,Y and Z respectively. The total funds available for these purposes are <920 per week. Profits
- per unit for models X,Y and Z are <40, <10and <70 respectively, but at the end of the week, company get a profit of <810. Solve the system of equations by matrix method.

- Prove that
$$\tan^{-1}\left(\frac{\cos x}{1-\sin x}\right) = \left(\frac{\pi}{4} + \frac{x}{2}\right), x \varepsilon \left(\frac{-\pi}{2}, \frac{\pi}{2}\right).$$