1. Find the equation of the line tangent to the circle \( x^2 - 2x + y^2 + 6y = 0 \) at the origin.

2. Which point on the curve \( y = \sqrt{x} \) is closest to the point \((1,0)\)  \\

3. An equilateral triangle is inscribed in a circle of radius 10cm as shown.

![Equilateral Triangle](image)

Find the area of the shaded region.

4. A rectangular plot of land is to be fenced along 3 sides using 39 feet of fencing. No fencing is needed on the 4th side, along the edge of a river. The area of the plot is 180 square feet. What are its dimensions?

5. A hurricane strikes and a rural area is without food or water. Three crews arrive. One can dispense needed supplies in 10 hours, a second in 15 hours, and a third in 20 hours. How long will it take with all three crews working together to dispense these needed supplies?

6. A grocery store makes up fruit baskets using as many as 4 apples, 3 pears, and 4 oranges. A basket must contain at least one piece of fruit. How many different fruit selections are possible?

7. Find the sum of the first 11 terms of the geometric sequence 4, -12, 36, -108, ...

8. The base of a rectangle lies on the \( x \)-axis, while the two upper vertices lie on the parabola \( y = 10 - x^2 \). Suppose that the coordinates of the upper right vertex of the rectangle are \((x,y)\). Express the area of the rectangle as a function of \( x \).