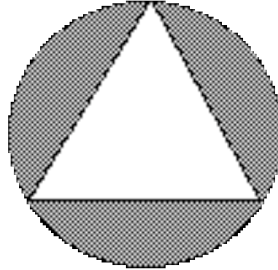


1. Find the equation of the line tangent to the circle  $x^2 - 2x + y^2 + 6y = 0$  at the origin.
2. Which point on the curve  $y = \sqrt{x}$  is closest to the point (1,0) ?
3. An equilateral triangle is inscribed in a circle of radius 10cm as shown.



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  $x$ .