1. A bicycle dealer has found that if 10-speed bicycles are sold for *x* dollars apiece and the price of gasoline is *y* cents per gallon, approximately *F*(*x*, *y*) bicycles will be sold each month, where $F\left(x,y\right)=200-24\sqrt{x}+4\left(0,1y+4\right)^{{3}/{2}}$. Currently, the bicycles sell for $324 apiece and gasoline sells for $1.20. Use marginal analysis to determine the change in the demand for bicycles that results when the price of bicycles is kept fixed but the price of gasoline decreases by 1 cent per gallon.
2. A monopolist offers two different products, each having the following market demand functions q1 = 20 - ½p1 and q2 = 30 - p2.The monopolist’s joint cost function is C(q1,q2) = 3q12 + 5q1q2 +q22. Determine the maximum profit. How much of each product must be produced to gain the maximum profit?
3. The demand and supply functions of a product are P = 15 – Q2 and P = 1,5 + 0,5 Q2. Find the maximum revenue the government can receive from tax.
4. Let the Total Cost be TC = Q3 – 15Q2 + 84Q + 300. Find the minimum marginal cost.
5. Suppose total cost function is C(*x*) = 8300 + 3.25*x* + 40∛*x* dollars. Find the average cost per unit and the marginal cost, and then evaluate them when *x* = 1000.