

KIX 1001: ENGINEERING MATHEMATICS 1

Tutorial 2: Functions & Derivatives

1. Find y' for $(x - y)^2 = x + y - 1$ by using implicit differentiation
2. Implicit differentiation to find an equation of the tangent line to the curve $5x^2 + 10xy^2 + 5y = 20$ at point $(2,2)$.
3. $y \cos x = 1 + \sin(xy)$. Find dy/dx by implicit differentiation.
4. Find dy/dx by implicit differentiation $4 \cos x \sin y = 1$.
5. An open box is to be made from cutting a square from each corner of a 12 in by 12 in piece of metal and then folding up the sides. What size square should be cut from each corner to produce a box of maximum volume?
6. We are going to fence in a rectangular field. If we look at the field from above the cost of the vertical sides are RM 10/ft, the cost of the bottom is RM2/ft and the cost of the top is RM 7 /ft. If we have RM 700 determine the dimensions of the field that will maximize the enclosed area.