Department of Mathematics and Statistics, I.I.T. Kanpur

MTH101A - Quiz 2A Examination - 20.10.2011

Maximum Marks: 20 **Time: 17:30-18:00 hrs**

NAME : ———————— Roll No. : ———— Section: ———

1 Sketch the curves $r = -\cos(2\theta)$ and $r = 1/2$. Further, find the area of the region that is inside the curve $r = -\cos(2\theta)$ and also inside the circle $r = 1/2$. [10]

2 Let C be the (infinite) cylinder generated by revolving the line $y = -x + \sqrt{6}$ about the line $y = -x$. Let S be the solid sphere $x^2 + y^2 + z^2 \leq 4$. Find the volume of the portion of the sphere which lies inside the cylinder C. [10]