

ING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
DEPARTMENT OF MATHEMATICS & STATISTICS

MATH 201-05

Quiz # 2

March 20, 2010

NAME:

ID#:

SHOW ALL YOUR WORK

1. **(4points)** Find equations of the tangent and normal lines to the graph of the polar curve $r = \sin 2\theta$ at $\theta = \pi/4$.
2. **(4points)** Find the area inside the curve $r = 1 + \cos \theta$ and outside the curve $r = \cos \theta$.
3. **(2points)** The distance from the point $P(x, y, z)$ and the point $A(1, -2, 0)$ is twice the distance between P and the point $B(0, 1, 1)$. Show that the set of all such points is a sphere and find its center and radius.