معهد بئر حسن الفني — العام الدراسي: 2011-2010

السنة : الأولـى — امتحان الفصل الأول

الاختصاص : صيانة طائرات — المادة : رياضات عامـة

الفرع : إنكليزي — الوقت : ساعة واحدة

➢ *Answer the following questions*:

I- Consider the following integral: $\int_0^1 \int_0^{\sqrt{1-x^2}} (x^2+y^2)dydx$. (***5-pts***)

a. Sketch region representing the boundaries of the above integral.

b. Use polar coordinates to evaluate the given integral.

II- Consider the tetrahedron ***D*** (solid region)define with vertices $(0,0,0),(1,1,0),(0,1,0)\ and\ (0,1,1)$.

a. Sketch the above region of integration(***1-pt***)

b. Set up the limits of integration for evaluating the triple integral of a function $F(x,y,z)$ over the given region ***D*** projecting on *xz*-plane. (1.***5-pts***)

c. Determine the volume of the tetrahedron. (2.***5-pts***)

III- A thin plate covers the triangular region bounded by the *x*-axis and the lines $x=1 and\ y=2x$ in the first quadrant. The plate's density at point (*x;y*) is: $\delta(x;y)=6x+6y+6$. (***5-pts***)

a. Draw the specified region of integration.

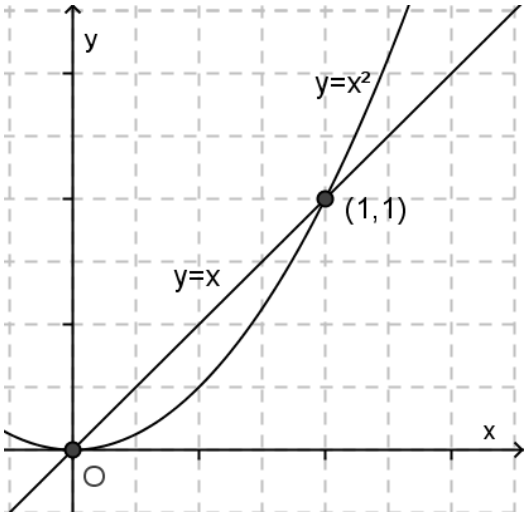
b. Find the plate's:

i. Mass.

ii. First moments.

c. Deduce the center of mass of the given plate.

IV- Determine the ***centroid*** of the following region: (***5-pts***)



Good Work