

King Saud University  
Department Of Mathematics.  
College of Sciences.

Second Mid-Term 1433  
Differential and integral  
Calculus.

Summer semester  
Mo.. 5/11/1437H.  
Time: 90 Minutes.

Q.1 [5+5]. 1) Find the area of the region  $R$  that is bounded by the graphs :  $y - x + 6 = 0$  and  $y^2 = x$ .

2) Find the value of the double integral :  $\int_0^1 \int_{\sqrt{y}}^1 \sqrt{x^3 + 1} dx dy$ .

Q.2 [5+5]. 1) Find the volume of the solid bounded by ,

$$x^2 + y^2 + z^2 = 4, \quad x^2 + y^2 = 1 \text{ and the } xy\text{-plane.}$$

2) Evaluate the following triple integral :

$$\int_{-2}^2 \int_{-\sqrt{4-x^2}}^{\sqrt{4-x^2}} \int_{\sqrt{x^2+y^2}}^{\sqrt{8-x^2-y^2}} (x^2 + y^2 + z^2) dz dy dx .$$

Q.3 [5] . Find the surface area of the portion of the graph  $z = 5 - x^2 - y^2$

That above the plane  $z = 1$  .