

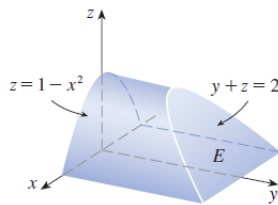
# Math 2211: Recitation 10 (T)

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(1) Solve any **two** the following problems:

(a) Find the area of the surface determined by the part of the paraboloid  $z = 1 - x^2 - y^2$  that lies above the plane  $z = -6$ .

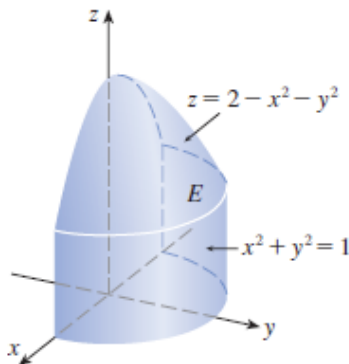
(b) Evaluate  $\iiint_E 8x \, dV$ , where  $R$  is determined by the following region



(c) Write the rectangular equation  $2x^2 - 6x + 2y^2 + z^2 = 7$  in cylindrical coordinates

(2) Solve the following problems. (**Do any two of them**).

(a) Evaluate  $\iiint_E 7(x^2 + y^2) \, dV$  where  $E$  is determined by the following region



(b) Evaluate  $\iiint_E z \, dV$ , where  $E$  is enclosed by the paraboloid  $z = x^2 + y^2$  and the plane  $z = 16$ .

(c) Write the rectangular equation  $x^2 + 2x + y^2 + z^2 + 3z = 4$  in spherical coordinates

**(Bonus)** Solve the following integrals. **(Do any one of them).**

(a) Use spherical coordinates to evaluate  $\iiint_B (x^2 + y^2 + z^2)^2 \, dV$ , where  $B$  is the ball with center the origin and radius 1.

(b) Use the given transformation to evaluate the integral  $\iint_R (x - 6y) \, dA$ , where  $R$  is the triangular region with vertices  $(0, 0)$ ,  $(5, 1)$  and  $(1, 5)$ ; with transformation  $x = 5u + v$ ,  $y = u + 5v$ .