

Quiz 6    MATH 201

① Evaluate the triple integral  $\iiint_E x^2 e^y \, dV$ , where  $E$  is bounded by the planes  $z=0$ ,  $x=1$ ,  $x=-1$ , and the parabolic cylinder  $z=1-y^2$ .

② Evaluate  $\iiint_E z \, dV$ , where  $E$  is bounded by the cylinder  $y^2 + z^2 = 9$ , and the planes  $x=0$ ,  $y=3x$ , and  $z=0$  in the first quadrant.

③ Evaluate,  $\int_{-3}^3 \int_{-\sqrt{9-x^2}}^{\sqrt{9-x^2}} \int_0^{9-x^2-y^2} (x^2+y^2)^{3/2} \, dz \, dy \, dx$ ,  
by changing to cylindrical coordinates.

④ Evaluate,  $\iiint_E x^2 \, dV$ , where  $E$  is bounded by the  $xz$ -plane and the hemispheres  $y = \sqrt{9-x^2-z^2}$  and  $y = -\sqrt{9-x^2-z^2}$ .

[Note: major axis of symmetry is  $y$ -axis].