Name: ID #: Section #:

(**1**) Evaluate the integrals

(**a**) [3pts]

$$\iint_R x^3 \sin(\pi y)\cos(\pi y)\, dA, \quad R : 0 \le x \le 1,\ \frac{1}{2} \le y \le 1.$$

(**b**) [3pts]

$$\int_0^1 \int_{\sqrt{y}}^1 \sqrt{1+x^3}\, dxdy$$

(**2**) [4pts] Find the volume of the solid bounded by the parabolic cylinders $x = y^2$ and $y = x^2$, and the planes $z = 0$ and $x + y - z = 0$.

Name: ID #: Section #:

(**1**) Evaluate the integrals

(**a**) [3pts]

$$\iint_R \left(x^2 + e^{x+y}\right)\, dA, \quad R : 0 \le x \le 1,\ 0 \le y \le 1.$$

(**b**) [3pts]

$$\int_0^1 \int_{\sqrt{x}}^1 \frac{1}{1+y^3}\, dydx$$

(**2**) [4pts] Find the volume of the solid bounded by the plane $x+y-z=0$, the parabolic cylinders $x=y^2$ and $y=x^2$, and the xy-plane.