Math 30b Orrison
Double and Triple Integrals
Tuesday, October 13, 2015

1.{a,b}, 2.{a,b}, 3.{a,b}, 4.{a,b}, 5{a,b}

1.a
Evaluate the following:

$$\int_0^1 \int_{\sqrt{x}}^1 24x^2 y \, dy \, dx$$

■

1.b
Evaluate the following:

$$\int_0^\pi \int_0^y \sin(x) \, dx \, dy$$

■

2.a
Evaluate the following:

$\iint_R (6x + 24y) \, dA$,where R is the region bounded by $y = x/2$, $y = 0$, and $x = 2$.

■

2.b
Evaluate the following:

$\iint_R 4x \, dA$,where R is the region bounded by $y = \ln x$, $y = 0$, and $x = 2$.

■

3.a
Use double integrals to find the area of the following regions:

the region bounded by $x = y - y^2$ and $x + y = 0$

■

3.b
Use double integrals to find the area of the following regions:

the region in the first quadrant bounded by $y = 2x - 4$ and $8y = 16 + x^2$

■

4.a
Express the following as iterated double integrals with the opposite order of integration and then evaluate:

$$\int_0^4 \int_{x/2}^2 e^{y^2}\, dy\, dx$$

■

4.b
Express the following as iterated double integrals with the opposite order of integration and then evaluate:

$$\int_0^2 \int_{x^2}^{2x} xy\, dy\, dx$$

■

5.a
Use triple integrals to find the following: the mass of the solid in the first octant that is bounded by

$z = y/2$, $x = 3$, $y = 4$ where the density is given by $\rho(x, y, z) = 4y$

■

5.b
Use triple integrals to find the following: the mass of the solid in the first octant that is bounded by

$z = 2 - y$, $x = 3$ where the density is given by $\rho(x, y, z) = z$

■