HW 9 — Due May 27, 2016 Problem Colley 5.5.9

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Collaborators: Drinkward Study Group

Math 60

Evaluate the integral

$$\int_0^2 \int_{x/2}^{(x/2)+1} x^5 (2y-x) e^{(2y-x)^2} \ dy \ dx$$

by making the substitution u = x, v = 2y - x.

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Find the total area enclosed inside the rose $r = \sin 2\theta$. (Hint: Sketch the curve and find the area inside a single leaf.)

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Problem Colley 5.5.25 Collaborators: Drinkward Study Group

Math 60

Evaluate

$$\iint_D \cos(x^2 + y^2) \ dA,$$

where D is the shaded region in Figure 5.106.

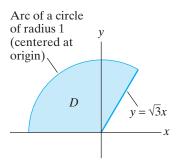


FIGURE 5.106. The region *D* of Exercise 25.

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Problem Colley 5.5.31 Collaborators: Drinkward Study Group

Math 60

Determine

$$\iiint_W (x^2 + y^2 + 2z^2) \ dV,$$

where *W* is the solid cylinder defined by the inequalities $x^2 + y^2 \le 4$, $-1 \le z \le 2$.

In Exercises 34 and 35, determine the values of the given integrals, where *W* is the region bounded by the two spheres $x^2 + y^2 + z^2 = a^2$ and $x^2 + y^2 + z^2 = b^2$, for 0 < a < b.

$$\iiint_W \frac{dV}{\sqrt{x^2 + y^2 + z^2}}$$

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Math 60

Determine

$$\iiint_W \left(2 + \sqrt{x^2 + y^2}\right) dV,$$

where
$$W = \{(x, y, z) | \sqrt{x^2 + y^2} \le z/2 \le 3 \}.$$