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About this Assignment

Due: **Tue Apr 22 2008 09:00 PDT****1.** SCalcET5 15.5.002. [295337] [Show Details](#)

Electric charge is distributed over the disk $x^2 + y^2 \leq 4$ so that the charge density at (x, y) is $\sigma(x, y) = x + y + x^2 + y^2$ (measured in coulombs per square meter). Find the total charge on the disk.

 C**2.** SCalcET5 15.5.010. [295429] [Show Details](#)

Find the mass and center of mass of the lamina that occupies the region D and has the given density function ρ .

$$D = \{(x, y) \mid 0 \leq y \leq \cos x, 0 \leq x \leq \pi/2\}; \rho(x, y) = x$$

Mass

Center of mass

(,)**3.** SCalcET5 15.5.014. [295209] [Show Details](#)

A lamina occupies the region inside the circle $x^2 + y^2 = 2y$ but outside the circle $x^2 + y^2 = 1$. Find the center of mass if the density at any point is inversely proportional to its distance from the origin.

(,)**4.** SCalcET5 15.6.002. [295325] [Show Details](#)

Find the area of the surface.

The part of the plane $2x + 5y + z = 10$ that lies inside the cylinder $x^2 + y^2 = 9$

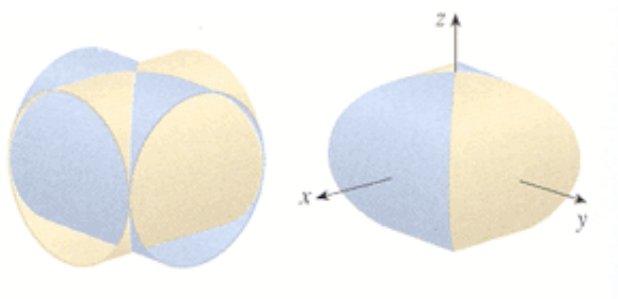
5. SCalcET5 15.6.008. [295376] [Show Details](#)

Find the area of the surface.

The surface $z = (2/3)(x^{3/2} + y^{3/2})$, $0 \leq x \leq 1$, $0 \leq y \leq 1$

6. SCalcET5 15.6.024. [295461] [Show Details](#)

The figure shows the surface created when the cylinder $y^2 + z^2 = 1$ intersects the cylinder $x^2 + z^2 = 1$. Find the area of this surface.



7. SCalcET5 15.7.004. [295232] [Show Details](#)

Evaluate the iterated integral.

$$\int_0^1 \int_x^{2x} \int_0^y 2xyz \, dz \, dy \, dx$$

8. SCalcET5 15.7.008. [295412] [Show Details](#)

Evaluate the triple integral where $E = \{(x,y,z) \mid 0 \leq x \leq 1, 0 \leq y \leq x, x \leq z \leq 2x\}$.

$$\int \int \int_E yz \cos(x^5) \, dV$$

9. SCalcET5 15.7.012. [295277] [Show Details](#)

Evaluate the triple integral where E is the solid tetrahedron with vertices $(0, 0, 0)$, $(0, 1, 0)$,

(1, 1, 0), and (0, 1, 1).

$$\iiint_E xz \, dV$$

10. SCalcET5 15.7.019. [349610] [Show Details](#)

Use a triple integral to find the volume of the given solid.

The solid bounded by the elliptic cylinder $4x^2 + z^2 = 4$ and the planes $y = 0$ and $y = z + 2$

11. SCalcET5 15.7.038. [295240] [Show Details](#)

Find the mass and center of mass of the given solid E with the given density function ρ .

E is the tetrahedron bounded by the planes $x = 0$, $y = 0$, $z = 0$, $x + y + z = 1$; $\rho(x,y,z) = y$

Mass

Center of mass

(, ,)

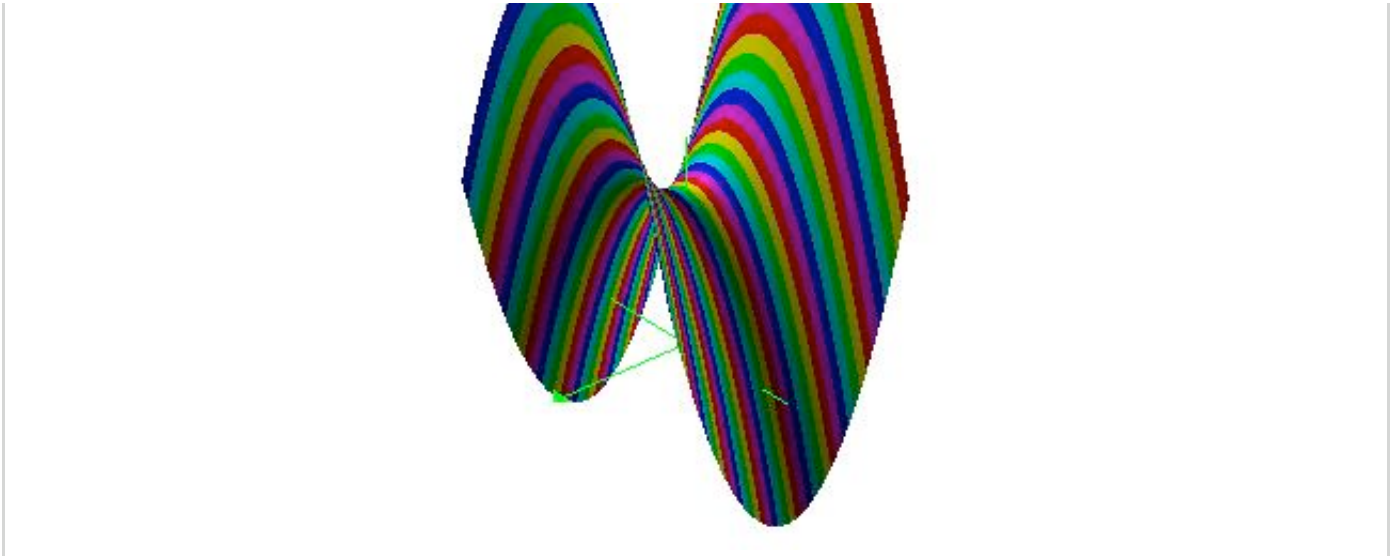
12. HW3.1 [540835] [Show Details](#)

Puffin lives on the upper surface S of a saddle point in the mountains G where S is given by the equation $z = 9 - x^2 + y^2$ for $x^2 + y^2 \leq 9$. Find the area of S .



Questions
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(A numerical answer xxx.xx is desired)



13. HW3.2 [540836] [Show Details](#)

The glacier G is the region of ice which is defined by the equations $0 \leq z \leq 9 - x^2 - y^2$. The density of the ice is given by the function $\rho(x, y, z) = 9 - z$. Find the total mass of the glacier.

(A numerical answer xx.xx is desired)



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14. HW3.3 [540837] [Show Details](#)

Let T be the triangular region with vertices $(0,0)$, $(2,2)$, and $(4,0)$. Find the total mass of the region given that the mass density is $\rho(x, y) = x^2$.

(A numerical answer xx.xx is desired)



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15. HW3.4 [540838] [Show Details](#)

Find the surface area of the top part of the easter egg. This is the surface $z = 32 - x^2 - y^2$ for $16 < z < 32$.



(A numerical answer xxx.xx is desired)

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