1. [–/1 Points] DETAILS **SCALC8 15.1.011.**

Evaluate the double integral by first identifying it as the volume of a solid.

$$\iint_R (12 - 6y)dA, \quad R = [0, 1] \times [0, 1]$$

2. [–/1 Points] DETAILS **SCALC8 15.1.032.**

Calculate the double integral.

$$\iint_R \frac{6x}{1 + xy} dA, R = [0, 6] \times [0, 1]$$

3. [–/1 Points] DETAILS **SCALC8 15.2.029.**

Find the volume of the given solid.

Bounded by the cylinders $z = 6x^2$, $y = x^2$ and the planes $z = 0$, $y = 4$

4. [–/1 Points] DETAILS **SCALC8 15.2.055.**

Evaluate the integral by reversing the order of integration.

$$\int_0^1 \int_{\arcsin(y)}^{\pi/2} \cos(x) \sqrt{25 + \cos^2(x)}\, dx\, dy$$

5. [–/1 Points] DETAILS **SCALC8 15.3.506.XP.**

Use polar coordinates to find the volume of the given solid.

Bounded by the paraboloids $z = 6x^2 + 6y^2$ and $z = 7 - x^2 - y^2$

6. [–/1 Points] DETAILS **SCALC8 15.3.507.XP.**

Evaluate the iterated integral by converting to polar coordinates.

$$\int_{-8}^{8}\int_{0}^{\sqrt{64-x^2}} \sin(x^2+y^2)\,dy\,dx$$

7. [–/1 Points] DETAILS **SCALC8 15.4.503.XP.**

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

D is bounded by the parabolas $y = x^2$ and $x = y^2$; $\rho(x, y) = 23\sqrt{x}$

$m =$

$(\bar{x}, \bar{y}) = ($ $)$

8. [–/1 Points] DETAILS **SCALC8 15.5.009.**

Find the area of the surface.

The part of the surface $z = xy$ that lies within the cylinder $x^2 + y^2 = 4$

9. [–/11 Points] DETAILS **SCALC8 15.5.023.**

Find the area of the finite part of the paraboloid $y = x^2 + z^2$ cut off by the plane $y = 81$. [*Hint:* Project the surface onto the xz-plane.]

Show My Work (Required)

10. [–/1 Points] DETAILS **SCALC8 15.6.009.**

Evaluate the triple integral.

$$\iiint_E y\,dV, \text{ where } E = \{(x, y, z) \mid 0 \le x \le 7,\ 0 \le y \le x,\ x - y \le z \le x + y\}$$

11. [–/1 Points] DETAILS **SCALC8 15.6.506.XP.**

Evaluate the triple integral.

$\iiint_T 2xyz\,dV$, where T is the solid tetrahedron with vertices (0, 0, 0), (1, 0, 0), (1, 1, 0), and (1, 0, 1)

12. [–/11 Points] DETAILS **SCALC8 15.6.040.**

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

E is bounded by the parabolic cylinder $z = 1 - y^2$ and the planes $x + 4z = 4$, $x = 0$, and $z = 0$; $\rho(x, y, z) = 8$.

$m =$

$(\bar{x}, \bar{y}, \bar{z}) = (\quad)$

Show My Work

13. [–/1 Points] DETAILS **SCALC8 15.7.512.XP.**

Use cylindrical coordinates.

Evaluate $\iiint_E 9(x^3 + xy^2)\,dV$, where E is the solid in the first octant that lies beneath the paraboloid $z = 1 - x^2 - y^2$.

14. [–/1 Points] DETAILS **SCALC8 15.7.021.**

Use cylindrical coordinates.

Evaluate $\iiint_E x^2\,dV$, where E is the solid that lies within the cylinder $x^2 + y^2 = 9$, above the plane $z = 0$, and below the cone $z^2 = 36x^2 + 36y^2$.

15. [–/1 Points] DETAILS **SCALC8 15.8.514.XP.**

Use spherical coordinates.

Evaluate $\iiint_E z\,dV$, where E lies between the spheres $x^2 + y^2 + z^2 = 1$ and $x^2 + y^2 + z^2 = 9$ in the first octant.

16. [–/1 Points] DETAILS **SCALC8 15.8.039.**

Use cylindrical or spherical coordinates, whichever seems more appropriate.

Evaluate $\iiint_E z\,dV$, where E lies above the paraboloid $z = x^2 + y^2$ and below the plane $z = 2y$.

Use either the Table of Integrals or a computer algebra system to evaluate the integral.

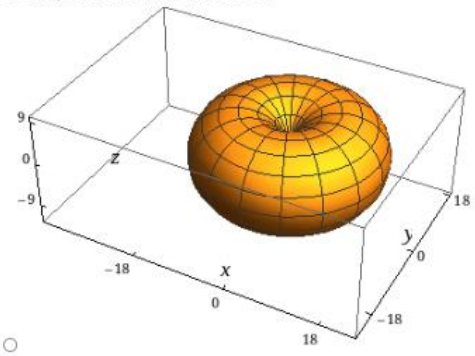
17. [–/1 Points] DETAILS SCALC8 15.8.040.

Use cylindrical or spherical coordinates, whichever seems more appropriate.

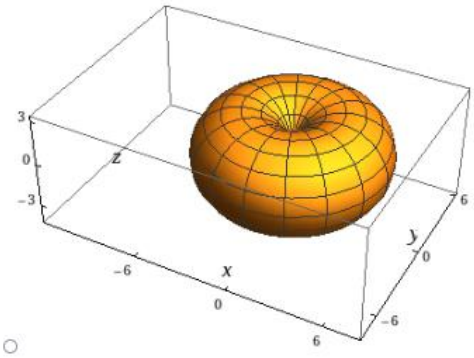
(a) Find the volume enclosed by the torus $\rho = 6 \sin(\varphi)$.

$V =$ ☐

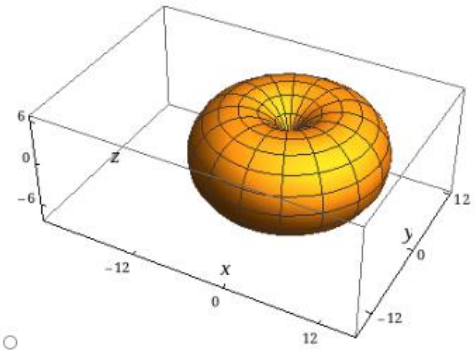
(b) Use a computer to draw the torus.



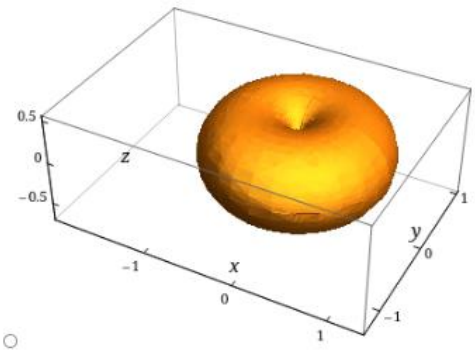
○



○



○



○

18. [–/1 Points] DETAILS SCALC8 15.9.504.XP.

Find the Jacobian of the transformation.

$$x = 8e^{s+t}, \quad y = 7e^{s-t}$$

$$\frac{\partial(x, y)}{\partial(s, t)} = \square$$

19. [–/1 Points] DETAILS SCALC8 15.9.027.

Evaluate the integral by making an appropriate change of variables.

$$\iint_R 3e^{4x+4y}\, dA, \text{ where } R \text{ is given by the inequality } 4|x| + 4|y| \le 4$$

☐