Triple Integrals- HW Problems

Evaluate the following integrals.

1. $\iiint_B (2x + 4y + 6z)dV$, where $B = [0,1] \times [0,1] \times [0,1]$.

2. $\iiint_B \left(ye^{(x+z)}\right)dV$, where $B = [0,1] \times [0,1] \times [0,2]$.

3. Write a triple integral with endpoints, but do not evaluate, that represents the volume of the solid bounded by the cylinder $x^2 + y^2 = 4$, and the planes $z = 0,\ 2x + y + z = 7$ (Draw the solid).

Evaluate the following integrals.

4. $\iiint_W (3z^2)dV$ where W is the solid bounded by the planes $x = 0,\ y = 0,\ z = 0,\ z = 1$, and the cylinder $x^2 + y^2 = 1$, where $x \geq 0,\ y \geq 0$ (Draw W).

5. $\int_0^2 \int_0^x \int_0^{x+y} \left(e^{(x^4)}(2y + 2z)\right) dzdydx$.

6. Using a triple integral, find the volume of the solid bounded by $z = 9 - x^2 - y^2$ and the x-y plane.

7. Set up with limits of integration, but **do not evaluate**, a triple integral to find the volume of the solid bounded by $x^2 + y^2 + z^2 = 1,\ x^2 + y^2 + z^2 = 9,\ z = 0,$ where $x, y, z \geq 0$.

8. Set up with limits of integration, but **do not evaluate**, a triple integral to find the volume of the solid bounded by the cylinder $2x^2 + y^2 = 2$, and the planes $z = 0$, and $x + y + z = 10$.