This print-out should have 5 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

001 10.0 points

Evaluate the triple integral

$$I = \int_0^2 \int_0^{\sqrt{4-x^2}} \int_0^{\sqrt{4-x^2-y^2}} 2xy \, dz \, dy \, dx \,.$$

1. $I = \dfrac{32}{15}$

2. $I = \dfrac{16}{5}$

3. $I = \dfrac{32}{5}$

4. $I = \dfrac{64}{45}$

5. $I = \dfrac{64}{15}$

002 10.0 points

Evaluate the triple integral

$$I = \int_0^1 \int_0^x \int_0^{x-y} (x + 2y) \, dz dy dx \,.$$

1. $I = \dfrac{5}{24}$

2. $I = -\dfrac{1}{8}$

3. $I = \dfrac{1}{8}$

4. $I = \dfrac{1}{24}$

5. $I = -\dfrac{1}{24}$

003 10.0 points

Evaluate the triple integral

$$I = \int \int \int_E y \sin(\pi x^4) \, dV$$

where E is the set of all points (x, y, z) in 3-space such that

$$0 \le x \le 1, \quad 0 \le y \le 3x, \quad x \le z \le 4x \,.$$

1. $I = \dfrac{25}{4\pi}$

2. $I = \dfrac{19}{4\pi}$

3. $I = \dfrac{27}{4\pi}$

4. $I = \dfrac{23}{4\pi}$

5. $I = \dfrac{21}{4\pi}$

004 10.0 points

Evaluate the triple integral

$$I = \int \int \int_B 3xz^2 \, dV$$

over the points (x, y, z) in the rectangular box

$$B = [3, 5] \times [3, 4] \times [0, 1] \,.$$

1. $I = 9$

2. $I = \dfrac{17}{2}$
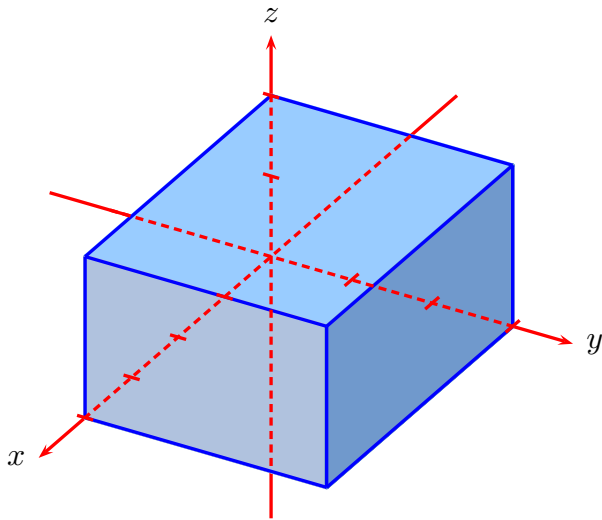
3. $I = 8$

4. $I = \dfrac{15}{2}$

5. $I = \dfrac{19}{2}$

005 10.0 points

Evaluate the triple integral

$$I = \int \int \int_B (x - y) \, dV$$

where B is the rectangular box in 3-space shown in

having one corner at the origin and three adjacent faces in the coordinate planes.

1. $I = 11$

2. $I = 13$

3. $I = 14$

4. $I = 10$

5. $I = 12$