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 integral

$$I = \int\int_R 2e^{-x^2-y^2}\,dxdy$$

when R is the region in the first quadrant of the xy-plane inside the graph of

$$x = \sqrt{9-y^2}\,.$$

1. $I = \frac{1}{2}\pi(1-e^{-3})$

2. $I = 2\pi(1-e^{-3})$

3. $I = 2\pi(1-e^{-9})$

4. $I = \pi(1-e^{-3})$

5. $I = \pi(1-e^{-9})$

6. $I = \frac{1}{2}\pi(1-e^{-9})$

002 10.0 points

Evaluate the iterated integral

$$I = \int_0^5 \int_0^{\sqrt{25-x^2}} e^{x^2+y^2}\,dydx$$

by converting to polar coordinates.

1. $I = \frac{1}{4}\pi(e^{25}-1)$

2. $I = \frac{1}{2}\pi(e^{5}-1)$

3. $I = \frac{1}{2}\pi(e^{25}-1)$

4. $I = \pi(e^{5}-1)$

5. $I = \pi(e^{25}-1)$

6. $I = \frac{1}{4}\pi(e^{5}-1)$

003 10.0 points

Evaluate the iterated integral

$$I = \int_0^1 \int_0^{\sqrt{1-y^2}} 2\sin(\pi x^2+\pi y^2)\,dxdy$$

by converting to polar coordinates.

1. $I = \frac{1}{2}$

2. $I = 1$

3. $I = 0$

4. $I = \frac{1}{\pi}$

5. $I = \frac{1}{2\pi}$

004 10.0 points

By changing to polar coordinates evaluate the integral

$$I = \int\int_R \sqrt{x^2+y^2}\,dxdy$$

when R is the region

$$\Big\{(x,y):\ 16 \le x^2+y^2 \le 25,\ \ y \ge 0\Big\}$$

in the xy-plane.

1. $I = \frac{64}{3}\pi$

2. $I = \frac{67}{3}\pi$

3. $I = \frac{70}{3}\pi$

4. $I = \frac{73}{3}\pi$

5. $I = \frac{61}{3}\pi$

005 10.0 points

Evaluate the iterated integral

$$I = \int_0^2 \int_0^{\sqrt{4-y^2}} 2xy \, dxdy$$

by converting to polar coordinates.

1. $I = \dfrac{11}{2}$

2. $I = 4$

3. $I = \dfrac{9}{2}$

4. $I = \dfrac{7}{2}$

5. $I = 5$