This print-out should have 8 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

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001   10.0 points

Determine the value of the double integral

$$ I = \int\int_R (6 - x)\, dxdy $$

over the region

$$ R = \{(x, y) : 1 \le x \le 6,\ 0 \le y \le 4\} $$

in the xy-plane by first identifying it as the volume of a solid.

1. $I = 46$

2. $I = 50$

3. $I = 48$

4. $I = 47$

5. $I = 49$

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002   10.0 points

Evaluate the integral

$$ I = \int_0^1 \int_1^2 (2x + x^2 y)\, dydx\,. $$

1. $I = 1$

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

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

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

5. $I = 2$

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003   10.0 points

Evaluate the double integral

$$ I = \int_2^3 \int_0^2 e^{x-y}\, dxdy\,. $$

1. $I = e^{-3} - e^{-2} + e^{-1} + 1$

2. $I = e^{-3} - e^{-2} - e^{-1} + 1$

3. $I = e^{-3} - e^{-2} - e^{-1} - 1$

4. $I = e^{-3} + e^{-2} - e^{-1} + 1$

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004   10.0 points

Determine the value of the double integral

$$ I = \int\int_A \frac{3xy^2}{9 + x^2}\, dA $$

over the rectangle

$$ A = \left\{ (x, y) :\ 0 \le x \le 2,\ -1 \le y \le 1 \right\}. $$

1. $I = \ln\!\left(\dfrac{9}{13}\right)$

2. $I = \ln\!\left(\dfrac{13}{9}\right)$

3. $I = \ln\!\left(\dfrac{13}{18}\right)$

4. $I = \dfrac{1}{2}\ln\!\left(\dfrac{13}{18}\right)$

5. $I = \dfrac{1}{2}\ln\!\left(\dfrac{13}{9}\right)$

6. $I = \dfrac{1}{2}\ln\!\left(\dfrac{9}{13}\right)$

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005   10.0 points

Evaluate the iterated integral

$$ I = \int_1^3 \int_0^3 \frac{2}{(x + y)^2}\, dx\, dy\,. $$

1. $I = \dfrac{1}{2}\ln\left(\dfrac{6}{5}\right)$

2. $I = \ln(2)$

3. $I = 2\ln(2)$

4. $I = 2\ln\left(\dfrac{6}{5}\right)$

5. $I = \dfrac{1}{2}\ln(2)$

6. $I = \ln\left(\dfrac{6}{5}\right)$

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006   10.0 points

Evaluate the iterated integral

$$I = \int_1^3 \int_1^3 \left(\frac{x}{y} + \frac{y}{x}\right) dy dx \,.$$

1. $I = 4\ln(8)$

2. $I = 8\ln(3)$

3. $I = 3\ln(8)$

4. $I = 4\ln(3)$

5. $I = 8\ln(4)$

6. $I = 3\ln(4)$

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007   10.0 points

Evaluate the double integral

$$I = \int \int_A \frac{5 + x^2}{1 + y^2}\, dx dy$$

when

$$A = \left\{(x, y) : 0 \le x \le 2, \quad 0 \le y \le 1\right\}.$$

1. $I = \dfrac{7}{2}\pi$

2. $I = \dfrac{11}{3}\pi$

3. $I = \dfrac{10}{3}\pi$

4. $I = \dfrac{19}{6}\pi$

5. $I = \dfrac{23}{6}\pi$

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008   10.0 points

Evaluate the integral

$$I = \int \int_A 3x e^{2xy}\, dx dy$$

over the rectangle

$$A = \{(x, y) : 0 \le x \le 3, \ 0 \le y \le 2\}.$$

1. $I = \dfrac{3}{16}\left(e^{12} - 12\right)$

2. $I = \dfrac{3}{8}\left(e^{12} - 12\right)$

3. $I = \dfrac{3}{16}\left(e^{12} - 11\right)$

4. $I = \dfrac{3}{8}\left(e^{12} - 13\right)$

5. $I = \dfrac{3}{16}\left(e^{12} - 13\right)$

6. $I = \dfrac{3}{8}\left(e^{12} - 11\right)$