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

$$I = \int x^2 \sqrt{x^3+6}\, dx\,.$$

1. $I = \frac{2}{9}\left(x^3+6\right)^{3/2} + C$

2. $I = \frac{1}{9}\left(x^3+6\right)^{3/2} + C$

3. $I = \frac{2}{9}\left(x^3+6\right)^{1/2} + C$

4. $I = \frac{1}{9}\left(x^3+6\right)^{1/2} + C$

5. $I = 3\left(x^3+6\right)^{1/2} + C$

6. $I = 3\left(x^3+6\right)^{3/2} + C$

002 10.0 points

Evaluate the definite integral

$$I = \int_1^5 \frac{2x-7}{\sqrt{7x-x^2}}\, dx\,.$$

003 10.0 points

Evaluate the integral

$$I = \int_0^1 3x \sqrt[3]{1-x^2}\, dx\,.$$

1. $I = \frac{9}{4}$

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

3. $I = -\frac{9}{8}$

4. $I = -\frac{9}{4}$

5. $I = \frac{9}{8}$

6. $I = -\frac{3}{4}$

004 10.0 points

Evaluate the integral

$$I = \int_0^6 te^{-t} dt\,.$$

1. $I = 1 - \frac{6}{e^7}$

2. $I = 1 - \frac{7}{e^6}$

3. $I = 1 + \frac{6}{e^7}$

4. $I = 1 + \frac{7}{e^7}$

5. $I = 1 + \frac{7}{e^6}$

6. $I = 1 - \frac{6}{e^6}$

005 10.0 points

Find the area bounded by the graphs of

$$f(x) = e^{4x}, \quad g(x) = e^{-8x}$$

and the line $y = 4$.

1. Area $= \frac{3}{16}(4\ln 4 + 3)$ sq. units

2. Area $= \frac{3}{2}(\ln 4 + 1)$ sq. units

3. Area $= \frac{3}{2}(\ln 4 - 1)$ sq. units

4. Area $= \frac{3}{8}(4\ln 4 - 3)$ sq. units

5. Area $= \frac{3}{4}(\ln 4 - 1)$ sq. units

6. Area $= \frac{3}{16}(4\ln 4 - 3)$ sq. units