

This print-out should have 13 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

001 10.0 points

Evaluate the integral

$$I = \int_0^1 x(1-x^2)^4 dx.$$

1. $I = -\frac{1}{4}$
2. $I = \frac{1}{8}$
3. $I = -\frac{1}{5}$
4. $I = \frac{1}{4}$
5. $I = -\frac{1}{8}$
6. $I = \frac{1}{10}$

002 10.0 points

Evaluate the integral

$$I = \int_0^{\pi/2} \sin x \{2f'(\cos x) - 1\} dx$$

when $f(0) = 2$ and $f(1) = 4$.

1. $I = 6$
2. $I = 4$
3. $I = 7$
4. $I = 5$
5. $I = 3$

003 10.0 points

Evaluate the integral

$$I = \int_0^{\pi/4} \left(\frac{1}{\cos^2 \theta} + 2 \cos 2\theta \right) d\theta.$$

1. $I = \frac{3}{2}$
2. $I = 2$
3. $I = 1$
4. $I = \frac{1}{2}$
5. $I = 0$

004 10.0 points

Evaluate the definite integral

$$I = \int_1^2 6 \ln(3x) dx.$$

1. $I = 6(\ln 3 - 1)$
2. $I = 6 \ln 12$
3. $I = 6(\ln 12 - 1)$
4. $I = 6(\ln 6 - 1)$
5. $I = 6 \ln 6$
6. $I = 6 \ln 3$

005 10.0 points

Determine the indefinite integral

$$I = \int \cos(\ln(x)) dx.$$

1. $I = \frac{1}{2}x\{\cos(\ln(x)) - \sin(\ln(x))\} + C$
2. $I = x\{\sin(\ln(x)) - \cos(\ln(x))\} + C$
3. $I = \frac{1}{2}x\{\sin(\ln(x)) - \cos(\ln(x))\} + C$

4. $I = \frac{1}{2}x\{\cos(\ln(x)) + \sin(\ln(x))\} + C$

5. $I = x\{\sin(\ln(x)) + \cos(\ln(x))\} + C$

6. $I = x\{\cos(\ln(x)) - \sin(\ln(x))\} + C$

006 10.0 points

If f is a continuous function such that

$$\int_0^{16} f(x) dx = 16,$$

determine the value of the integral

$$I = \int_0^4 6f(4x) dx.$$

1. $I = 21$

2. $I = 22$

3. $I = 23$

4. $I = 24$

5. $I = 25$

007 10.0 points

Evaluate the integral

$$I = \int_0^{\pi/4} 6x \sec^2 x dx.$$

1. $I = 3\pi - \frac{3}{2}\ln 2$

2. $I = 3\pi + \frac{3}{2}\ln 2$

3. $I = 3\pi + 6\ln 2$

4. $I = \frac{3}{2}\pi + 3\ln 2$

5. $I = \frac{3}{2}\pi - 6\ln 2$

6. $I = \frac{3}{2}\pi - 3\ln 2$

008 10.0 points

Evaluate the integral

$$I = \int_0^1 4\sin(5\sqrt{x}) dx.$$

1. $I = \frac{4}{5}\left(\frac{1}{5}\sin 5 - \cos 5\right)$

2. $I = \frac{8}{5}\left(\cos 5 - \frac{1}{5}\sin 5\right)$

3. $I = \frac{4}{5}\left(\frac{1}{5}\sin 5 + \cos 5\right)$

4. $I = \frac{8}{5}\left(\frac{1}{5}\sin 5 + \cos 5\right)$

5. $I = \frac{4}{5}\left(\sin 5 + \frac{1}{5}\cos 5\right)$

6. $I = \frac{8}{5}\left(\frac{1}{5}\sin 5 - \cos 5\right)$

009 10.0 points

Evaluate the integral

$$I = \int_{\pi/6}^{\pi/3} (9\sin 2x + 2\cos 2x) dx.$$

1. $I = \sqrt{3}$

2. $I = 8$

3. $I = 9$

4. $I = \frac{9}{2}$

5. $I = \frac{9}{2}\sqrt{3}$

6. $I = 5\sqrt{3}$

010 10.0 points

Determine the integral

$$I = \int t^2 \cos(2 - t^3) dt.$$

1. $I = -\frac{1}{3} \sin(2 - t^3) + C$
2. $I = -\sin(2 - t^3) + C$
3. $I = \cos(2 - t^3) + C$
4. $I = \frac{1}{3} \sin(2 - t^3) + C$
5. $I = 3 \cos(2 - t^3) + C$
6. $I = -3 \cos(2 - t^3) + C$

011 10.0 points

Evaluate the integral

$$I = \int_1^2 x^2 f''(x) dx$$

when

$$\begin{aligned} f(1) &= 9, & f(2) &= 7, \\ f'(1) &= 8, & f'(2) &= 6. \end{aligned}$$

1. $I = 6 + 2 \int_1^2 f(x) dx$
2. $I = 11 + 2 \int_1^2 f(x) dx$
3. $I = 6 - 2 \int_1^2 f(x) dx$
4. $I = 6 - \int_1^2 f(x) dx$
5. $I = 11 - \int_1^2 f(x) dx$
6. $I = 11 + \int_1^2 f(x) dx$

012 10.0 points

Evaluate the integral

$$I = \int_e^3 \frac{\ln(x)}{x^2} dx.$$

1. $I = \frac{2}{e} + \frac{1}{3} (\ln(3) + 1)$
2. $I = \frac{3}{e} - \frac{1}{2} (\ln(3) - 1)$
3. $I = \frac{2}{e} - \frac{1}{3} (\ln(3) - 1)$
4. $I = \frac{3}{e} + \frac{1}{2} (\ln(3) + 1)$
5. $I = \frac{3}{e} - \frac{1}{2} (\ln(3) + 1)$
6. $I = \frac{2}{e} - \frac{1}{3} (\ln(3) + 1)$

013 10.0 points

Determine the integral

$$I = \int (x^2 - 1) \cos(2x) dx.$$

1. $I = \frac{1}{4} (2x \cos(2x) + (2x^2 - 3) \sin(2x)) + C$
2. $I = \frac{1}{4} (2x \sin(2x) - (2x^2 - 3) \cos(2x)) + C$
3. $I = \frac{1}{2} (2x \cos(2x) - (2x^2 - 3) \sin(2x)) + C$
4. $I = \frac{1}{2} x^2 \sin(2x) - x \cos(2x) - \frac{1}{2} \sin(2x) + C$
5. $I = \frac{1}{2} (2x \cos(2x) + (2x^2 - 3) \sin(2x)) + C$
6. $I = -x^2 \cos(2x) + x \sin(2x) + \frac{1}{2} \cos(2x) + C$