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

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

1. $I = \frac{7}{2}\sqrt{3}$

2. $I = 3\sqrt{3}$

3. $I = 6$

4. $I = 5$

5. $I = 3$

6. $I = \sqrt{3}$

002　10.0 points

Evaluate the integral

$$I = \int_0^1 5x (1 - x^2)^4 \, dx \, .$$

1. $I = \frac{5}{4}$

2. $I = -1$

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

4. $I = -\frac{5}{4}$

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

6. $I = -\frac{5}{8}$

003　10.0 points

Determine the integral

$$I = \int 4x (3 + 2x^2)^4 \, dx .$$

1. $I = (3 + 2x^2)^5 + C$

2. $I = \frac{1}{5} (3 + 2x^2)^5 + C$

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

4. $I = -(3 + 2x^2)^5 + C$

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

004　10.0 points

The graph of f has slope

$$\frac{df}{dx} = x\sqrt{2x^2 + 1}$$

and passes through the point $(2, 2)$. Find the y-intercept of this graph.

1. y-intercept $= -\frac{5}{3}$

2. y-intercept $= -2$

3. y-intercept $= -\frac{8}{3}$

4. y-intercept $= -\frac{4}{3}$

5. y-intercept $= -\frac{7}{3}$

005　10.0 points

Evaluate the integral

$$I = \int x^2 \sqrt{x^3 + 7} \, dx \, .$$

1. $I = \frac{1}{9} (x^3 + 7)^{3/2} + C$

2. $I = 3\left(x^3 + 7\right)^{1/2} + C$

3. $I = 3\left(x^3 + 7\right)^{3/2} + C$

4. $I = \dfrac{1}{9}\left(x^3 + 7\right)^{1/2} + C$

5. $I = \dfrac{2}{9}\left(x^3 + 7\right)^{1/2} + C$

6. $I = \dfrac{2}{9}\left(x^3 + 7\right)^{3/2} + C$

006　10.0 points

Determine the integral

$$I = \int \frac{2}{(1 + 4x)^3}\, dx\,.$$

1. $I = \dfrac{1}{8(1 + 4x)^4} + C$

2. $I = -\dfrac{1}{8(1 + 4x)^4} + C$

3. $I = \dfrac{1}{4(1 + 4x)^2} + C$

4. $I = -\dfrac{1}{4(1 + 4x)^2} + C$

5. $I = -\dfrac{1}{8(1 + 4x)^2} + C$

6. $I = \dfrac{1}{4(1 + 4x)^4} + C$

007　10.0 points

Evaluate the definite integral

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

008　10.0 points

Determine the integral

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

1. $I = 3\cos(3 - t^3) + C$

2. $I = -\dfrac{1}{3}\sin(3 - t^3) + C$

3. $I = \cos(3 - t^3) + C$

4. $I = -\sin(3 - t^3) + C$

5. $I = -3\cos(3 - t^3) + C$

6. $I = \dfrac{1}{3}\sin(3 - t^3) + C$

009　10.0 points

Determine the integral

$$I = \int \cos^5 x\, \sin x\, dx\,.$$

1. $I = \dfrac{1}{4}\sin^4 x + C$

2. $I = -\dfrac{1}{5}\cos^5 x + C$

3. $I = -\dfrac{1}{6}\cos^6 x + C$

4. $I = \dfrac{1}{5}\sin^5 x + C$

5. $I = -\dfrac{1}{4}\cos^4 x + C$

6. $I = \dfrac{1}{6}\sin^6 x + C$

010　10.0 points

Determine the integral

$$I = \int \frac{x - 4}{(x^2 - 8x - 6)^4}\, dx\,.$$

1. $I = -\dfrac{1}{3}\left(\dfrac{1}{x^2 - 8x - 6}\right)^3 + C$

2. $I = \dfrac{1}{3}\left(\dfrac{1}{x^2 - 8x - 6}\right)^3 + C$

3. $I = -\dfrac{1}{8}\left(\dfrac{1}{x^2 - 8x - 6}\right)^3 + C$

4. $I = -\dfrac{1}{6}\left(\dfrac{1}{x^2-8x-6}\right)^3 + C$

5. $I = \dfrac{1}{6}\left(\dfrac{1}{x^2-8x-6}\right)^3 + C$

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011   10.0 points

Determine the integral

$$I = \int \frac{1}{\theta^2}\left(5\cos\left(\frac{1}{\theta}\right) - \frac{2}{\theta}\right) d\theta$$

1. $I = -\dfrac{1}{\theta^2} - 5\cos\left(\dfrac{1}{\theta}\right) + C$

2. $I = \dfrac{1}{\theta^2} + 5\sin\left(\dfrac{1}{\theta}\right) + C$

3. $I = \dfrac{1}{\theta^2} - 5\cos\left(\dfrac{1}{\theta}\right) + C$

4. $I = -\dfrac{1}{\theta^2} - 5\sin\left(\dfrac{1}{\theta}\right) + C$

5. $I = \dfrac{1}{\theta^2} - 5\sin\left(\dfrac{1}{\theta}\right) + C$

6. $I = \dfrac{1}{\theta^2} + 5\cos\left(\dfrac{1}{\theta}\right) + C$

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012   10.0 points

Evaluate the integral

$$I = \int 3\sec^6 x \tan x \, dx.$$

1. $I = \dfrac{3}{7}\sec^7 x + C$

2. $I = \dfrac{1}{2}\csc^6 x + C$

3. $I = \dfrac{1}{2}\sec^6 x + C$

4. $I = \dfrac{3}{5}\sec^5 x + C$

5. $I = \dfrac{3}{5}\csc^5 x + C$

6. $I = \dfrac{3}{7}\csc^7 x + C$

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013   10.0 points

Find the value of the integral

$$I = \int_0^{\pi/4} \frac{\tan x - 3}{\cos^2 x}\, dx.$$

1. $I = -3$

2. $I = -4$

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

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

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