This print-out should have 16 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering. V1:1, V2:1, V3:3, V4:1, V5:1.

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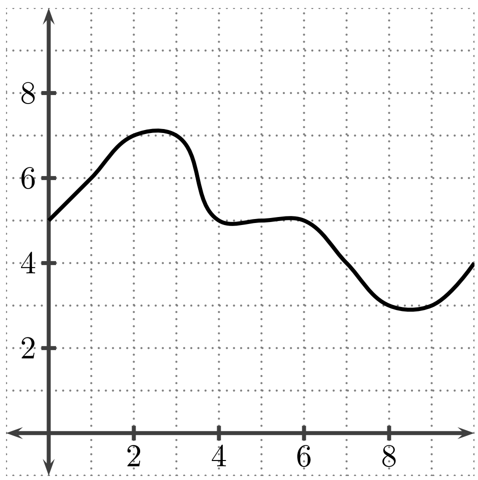
001 (part 1 of 1) 10 points

If f is the function whose graph on [0, 10] is given by



use the Trapezoidal Rule with $n = 5$ to estimate the definite integral

$$I = \int_3^8 f(x)\, dx\,.$$

1. $I \approx 23$

2. $I \approx \dfrac{47}{2}$

3. $I \approx 22$

4. $I \approx 24$

5. $I \approx \dfrac{45}{2}$

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002 (part 1 of 1) 10 points

Find

$$\int \frac{e^{7x}}{9 + e^{14x}}\, dx\,.$$

1. $\dfrac{1}{3} \arcsin e^{7x} + C$

2. $\arcsin e^{7x} + C$

3. $\dfrac{1}{21} \arctan\left(\dfrac{1}{3} e^{7x}\right) + C$

4. $\dfrac{1}{3 + e^{7x}} + C$

5. None of these.

6. $\dfrac{1}{3} \text{arcsec}\ e^{7x} + e^{7x} + C$

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003 (part 1 of 1) 10 points

Evaluate the definite integral

$$I = \int_0^1 \frac{x - 11}{x^2 - x - 2}\, dx\,.$$

1. $I = 7 \ln 3$

2. $I = \ln 3$

3. $I = -7 \ln 3$

4. $I = 7 \ln 2$

5. $I = -\ln 3$

6. $I = \ln 2$

7. $I = -7 \ln 2$

8. $I = -\ln 2$

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004 (part 1 of 1) 10 points

Evaluate the definite integral

$$I = \int_0^{\pi/4} \frac{4 \cos x + 6 \sin x}{\cos^3 x}\, dx\,.$$

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

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

3. $I = 10$

4. $I = 7$

5. $I = 1$

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005 (part 1 of 1) 10 points

Determine the indefinite integral

$$I = \int \frac{1}{\sqrt{6x - x^2}}\, dx\,.$$

1. $I = \sin^{-1}\left(\frac{x+3}{3}\right) + C$

2. $I = 2\sqrt{6x - x^2} + C$

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

4. $I = \sin^{-1}\left(\frac{x-3}{3}\right) + C$

5. $I = \frac{\sqrt{6x - x^2}}{3} + C$

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006 (part 1 of 1) 10 points

Determine the value of the definite integral

$$I = \int_6^{12} \frac{\ln t}{t^2}\, dt.$$

1. $I = \frac{1}{6} + \frac{1}{6}\ln 3$

2. $I = \frac{1}{12} + \frac{1}{3}\ln 3$

3. $I = \frac{1}{6} + \frac{1}{12}\ln 3$

4. $I = \frac{1}{12} + \frac{1}{12}\ln 3$

5. $I = \frac{1}{12} + \frac{1}{6}\ln 3$

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007 (part 1 of 1) 10 points

Determine if the improper integral

$$I = \int_4^{\infty} 4xe^{-4x^2}\, dx$$

converges, and if it does, find its value.

1. $I = e^{-64}$

2. $I = 4e^{-64}$

3. $I = \frac{1}{2}e^{64}$

4. I does not converge

5. $I = e^{64}$

6. $I = \frac{1}{2}e^{-64}$

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008 (part 1 of 1) 10 points

Determine if the improper integral

$$I = \int_0^1 4\ln 6x\, dx$$

converges, and if it does, find its value.

1. $I = 4(\ln 6 + 1)$

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

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

4. $I = 4\ln 6 - 6$

5. $I = 6\ln 4 + 4$

6. I does not converge

7. $I = 6(\ln 4 + 1)$

009 (part 1 of 1) 10 points

Determine f_y when

$$f(x, y) = \sin(4x - y) - y\cos(4x - y).$$

1. $f_y = -y\sin(4x - y)$
2. $f_y = 2\cos(4x - y) + y\sin(4x - y)$
3. $f_y = y\cos(4x - y)$
4. $f_y = 2\sin(4x - y) - y\cos(4x - y)$
5. $f_y = -2\cos(4x - y) - y\sin(4x - y)$
6. $f_y = -2\sin(4x - y) + y\cos(4x - y)$
7. $f_y = y\sin(4x - y)$
8. $f_y = -y\cos(4x - y)$

010 (part 1 of 1) 10 points

Find the volume of the solid under the graph of

$$f(x, y) = 3 + 9x^2 + 4y$$

and above the rectangle

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

1. volume = 61 cu.units
2. volume = 54 cu.units
3. volume = 55 cu.units
4. volume = 56 cu.units
5. volume = 63 cu.units

011 (part 1 of 1) 10 points

Evaluate the double integral

$$I = \int\int_A (4x + 3)\, dxdy$$

when A is the bounded region enclosed by $y = x$ and $y = x^2$.

1. $I = \frac{2}{3}$
2. $I = \frac{7}{6}$
3. $I = \frac{1}{2}$
4. $I = 1$
5. $I = \frac{5}{6}$

012 (part 1 of 1) 10 points

Reverse the order of integration in the integral

$$I = \int_4^{\sqrt{24}} \Big(\int_{x^2/6}^4 f(x, y)\, dy\Big) dx,$$

but make no attempt to evaluate either integral.

1. $I = \int_{y^2/6}^4 \Big(\int_4^{\sqrt{24}} f(x, y)\, dx\Big) dy$
2. $I = \int_{\frac{8}{3}}^4 \Big(\int_{4y}^{\sqrt{6}} f(x, y)\, dx\Big) dy$
3. $I = \int_{\frac{8}{3}}^4 \Big(\int_4^{\sqrt{6y}} f(x, y)\, dx\Big) dy$
4. $I = \int_4^6 \Big(\int_{\sqrt{6}}^{4y} f(x, y)\, dx\Big) dy$
5. $I = \int_{\frac{8}{3}}^4 \Big(\int_{\sqrt{6y}}^4 f(x, y)\, dx\Big) dy$

013 (part 1 of 1) 10 points

Determine if the sequence $\{a_n\}$ converges, and if it does, find its limit when

$$a_n = \frac{3n + (-1)^n}{6n + 1}.$$

1. converges with limit $= \frac{1}{2}$
2. converges with limit $= \frac{2}{3}$
3. converges with limit $= \frac{1}{3}$
4. converges with limit $= \frac{3}{7}$
5. sequence does not converge

014 (part 1 of 1) 10 points

Determine if the sequence $\{a_n\}$ converges, and if it does, find its limit when

$$a_n = \int_n^{7n} \frac{1}{2x + 5}\, dx.$$

1. limit $= \frac{1}{2} \ln \frac{7}{2}$
2. the sequence diverges
3. limit $= \frac{1}{2} \ln \frac{1}{7}$
4. limit $= \ln 7$
5. limit $= \frac{1}{2} \ln 7$

015 (part 1 of 1) 10 points

If the n^{th} partial sum of an infinite series is

$$S_n = \frac{n^2 - 2}{4n^2 + 1},$$

what is the sum of the series?

1. sum $= \frac{5}{16}$
2. sum $= \frac{1}{4}$
3. sum $= \frac{1}{8}$
4. sum $= \frac{3}{8}$
5. sum $= \frac{3}{16}$

016 (part 1 of 1) 10 points

Determine if the series

$$\sum_{n=1}^{\infty} \frac{2 + 4^n}{5^n}$$

converges or diverges, and if it converges, find its sum.

1. converges with sum $= \frac{15}{4}$
2. converges with sum $= \frac{19}{4}$
3. series diverges
4. converges with sum $= \frac{9}{2}$
5. converges with sum $= 4$
6. converges with sum $= \frac{17}{4}$