Math 76 Lecture Problem Solving 5.5
Burger

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

Evaluate the integral.

1) $\int \frac{x\,dx}{(7x^2+3)^5}$ 1) _____

A) $-\frac{1}{14}(7x^2+3)^{-6}+C$ B) $-\frac{1}{56}(7x^2+3)^{-4}+C$

C) $-\frac{7}{3}(7x^2+3)^{-4}+C$ D) $-\frac{7}{3}(7x^2+3)^{-6}+C$

2) $\int 3x^2\sqrt[4]{4+4x^3}\,dx$ 2) _____

A) $\frac{12}{5}\left(4+4x^3\right)^{5/4}+C$ B) $-2\left(4+4x^3\right)^{-3/4}+C$

C) $\frac{1}{5}\left(4+4x^3\right)^{5/4}+C$ D) $3\left(4+4x^3\right)^{5/4}+C$

3) $\int \frac{1}{t^2}\sin\left(\frac{8}{t}+3\right)dt$ 3) _____

A) $-\frac{1}{8}\cos\left(\frac{8}{t}+3\right)+C$ B) $8\cos\left(\frac{8}{t}+3\right)+C$

C) $\frac{1}{8}\cos\left(\frac{8}{t}+3\right)+C$ D) $-\cos\left(\frac{8}{t}+3\right)+C$

4) $\int \frac{\ln x^6}{x}\,dx$ 4) _____

A) $\frac{1}{2}(\ln x^6)^2+C$ B) $\frac{1}{12}(\ln x^6)^2+C$ C) $\frac{1}{6}(\ln x^6)^2+C$ D) $\frac{1}{\ln x^6}+C$

5) $\int \frac{e^x\,dx}{\sqrt{1-e^{2x}}}$ 5) _____

A) $e^x \sin^{-1}(e^x)+C$ B) $\sin^{-1}(e^x)+C$

C) $-2\sqrt{1-e^{2x}}+C$ D) $\sec^{-1}(e^x)+C$

Use the substitution formula to evaluate the integral.

6) $\int_{\pi/3}^{2\pi} 3\cos^2 x \sin x\,dx$ 6) _____

A) $\frac{7}{8}$ B) $-\frac{7}{8}$ C) $-\frac{21}{8}$ D) $-\frac{129}{1024}$

7) $\int_0^{5\pi/4} \tan \frac{x}{5}\, dx$ 7) _____

A) $\frac{5\sqrt{2}}{2}$ B) $\frac{5 \ln 2}{2}$ C) $\frac{-5 \ln 2}{2}$ D) $\frac{-5\sqrt{2}}{2}$

8) $\int_0^{1} \frac{dx}{\sqrt{81 - x^2}}$ 8) _____

A) $\cos^{-1} \frac{1}{9}$ B) $\frac{1}{9} \sin^{-1} \frac{1}{9}$ C) $9 \cos^{-1} \frac{1}{9}$ D) $\sin^{-1} \frac{1}{9}$

Evaluate the integral by using multiple substitutions.

9) $\int \frac{x \cos 21x^2 \sqrt{\sin 21x^2}}{5}\, dx$ 9) _____

A) $\frac{\sqrt{\sin 21x^2}}{210} + C$ B) $\frac{\sin^{3/2} 21x^2}{315} + C$ C) $\frac{\sin^{3/2} x}{315} + C$ D) $\frac{\sin^{3/2} x^2}{15} + C$

10) $\int \sqrt{1 + \sin^2 (x - 8)} \sin (x - 8) \cos (x - 8)\, dx$ 10) _____

A) $(1 + \cos^2 (x - 8))^{3/2} + C$ B) $\frac{1}{3}(1 + \sin^2 x)^{3/2} + C$

C) $\frac{1}{3}(1 + \sin^2 (x - 8))^{3/2} + C$ D) $\frac{3}{4}\sqrt{1 + \sin^2(x - 8)} + C$

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

11) Compute the definite integral, on the interval [2,5] ,of the function f(x)=2x–3 as a limit of Riemann Sums.