

Quizzes P1

CALCULUS II
FIRST PARTIAL
QUIZ 1A

Name: Celia, Habel, Renata, Guiller ID#: A513014 Date: 13 / 01 / 18 82

Answer the following problems with complete procedure.

1. Find the approximate value of $\sqrt[3]{269}$ (20 pts)

$\sqrt[3]{x} = x^{1/3} = \frac{1}{3}x^{-2/3}$ $x = 269 \rightarrow 271 - 2$

$\frac{1}{3}(271)^{-2/3}$

$\sqrt[3]{27} + \frac{1}{3}(27)^{-2/3}(-2)$

$3 + \frac{1}{3} = 2.99$

2. Given the equation $f(x) = x^2 - 2x + 3$ find the line tangent to the curve at $X = a = 0$, (20 pts)

$f(0) = 0^2 - 2(0) + 3 = 3 = y$ $x = 0$ $y = y_1 + m(x - x_1)$

$f'(x) = 2x - 2$ $y = 3 - 2(x - 0)$

$f'(0) = 2(0) - 2 = -2 = m$ $y = -2x + 3$

3. The edge of a cube was found to be 22 cm, with a possible error in measurement of 0.2cm. Estimate the maximum possible error in computing the volume of the cube (20 pts)

$v = x^3$

$v' = 3x^2 dx$

$v' = 3(22)^2 = 1452$

$10,648 \text{ cm}^3 = 1452 \text{ cm}^3$

4. A can is going to be modified in such a way that its height will change from 14cms to 14.6 cm but the diameter of the base will remain as 9cm. $r = 4.5 \text{ cm}$

a) Find the change in the volume of the can (20 pts)

$V = \pi r^2 h$

$V_1 = \pi (4.5)^2 (14) = 890.64$ $890.64 - 890.64 =$

$V_2 = \pi (4.5)^2 (14.6) = 918.81$ 36.17 cm³

b) Find the approximate change in the volume of the can (20 pts)

$V = \pi r^2 h$

$\frac{dV}{dh} = \pi r^2$

$\frac{dV}{dh} = \pi (4.5)^2$

$\frac{dV}{dh} = 63.58$

$\Delta V = 63.58 \Delta h$

$\Delta V = 63.58 (0.2) = 12.716$

12.716

Bonus

1. Minneapolis \times

2. 18

CALCULUS II
FIRST PARTIAL
QUIZ 2B

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1. Multiple choice. Choose the letter of the right answer (10 points).

1. Choose the sentence that best describes the approximate area below the graph of $f(x)$:

a) Approximation of the area on the interval $[0, 4]$ using 4 partitions with left-hand calculations.

b) Approximation of the area on the interval $[1, 3]$ using 4 partitions with right-hand calculations.

c) Approximation of the area on the interval $[0, 4]$ using 4 partitions with right-hand calculations.

d) Approximation of the area on the interval $[1, 3]$ using 4 partitions with left-hand calculations.

II. Evaluate the integral using the following values. SHOW THE STEPS OF YOUR PROCEDURE. (5 points each)

$\int_1^2 x dx = 7$ $\int_1^2 x^2 dx = 24$ $\int_1^2 dx = 4$

a. $\int_1^2 (2x^2 + 5x + 3) dx = 2(2^3 - 1^3) + 5(2 - 1) + 3(2 - 1) = 16 + 5 + 3 = 24$

b. $\int_1^2 20 dx = 20(2 - 1) = 20$

c. $\int_1^2 x^3 dx = \frac{1}{4}(2^4 - 1^4) = \frac{1}{4}(16 - 1) = \frac{15}{4}$

d. $\int_1^2 x dx = \frac{1}{2}(2^2 - 1^2) = \frac{1}{2}(4 - 1) = \frac{3}{2}$

IV. Procedure: Solve the following problem showing your entire procedure.

1) Approximate the area of a plane regions using left hand, right hand and middle points approximations.

$f(x) = 9 - x^2$ on $[-3, 0]$ 4 rectangles (20 points)

Area (Left hand) = 34.5 u^2

Area (Right hand) = 37.5 u^2

Middle points:

$(-3, 0) \rightarrow 18$

$(-2.25, 6.1875) \rightarrow 10.54$

$(-1.5, 6.75) \rightarrow 8.44$

$(-0.75, 4.5) \rightarrow 5.12$

$(0, 0) \rightarrow 0$

CALCULUS II
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QUIZ 2B

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2) Give the graph (remember to shade the corresponding area whose area is given by the following definite integral. Then use a geometric formula to evaluate the integral (by finding the area) (15 points each)

$\int_0^2 (4 - x) dx$

Graph:

Procedure by geometric formulas

$2 \times 4 = 8$

$\frac{2 \times 2}{2} = 2$

$8 - 2 = 6 \text{ u}^2$

$\int_0^2 x dx$

Graph:

Procedure by geometric formulas

$2 \times 2 = 4$

$\frac{2 \times 2}{2} = 2$

$4 - 2 = 2 \text{ u}^2$

3) Based on the following graph evaluate the given definite integrals (5 points each):

1. $\int_0^2 f(x) dx = 950 \text{ u}^2$

2. $\int_2^4 f(x) dx = 1500 \text{ u}^2$

3. $\int_4^6 f(x) dx = 7350 \text{ u}^2$

4. $\int_6^8 f(x) dx = 8150 \text{ u}^2$

Bonus

1. Patriots vs Eagle

2. Day

Quizes P3

Prepa Tec Campus Cumbres
 Calculus II 3 partial Quiz # 1A
 Name: Cristian Humberto Arce Frans 7/6 ID: 26033001 April, 2018

Choose T (true) or F (false) for each statement.

1. The partial fraction decomposition of the integral $\int \frac{x^2+3x+1}{x^2-2x-1} dx$ is $\frac{x}{x-1} + \frac{2}{x+1} + \frac{C}{x-1}$ T
2. The integral of $\int \frac{2x^2+2x+6}{x^2+2x+1} dx$ is $6 \ln|x-1| - \ln|x+1| - 9 \ln|x+3| + C$ F
3. The integral of $\int (18-12x)(x^2-3)^3 dx$ is $-2(x^2-3)^4 + C$ T
4. The integral of $\int 5x\sqrt{x-3} dx$ is $(x-3)^{3/2} + (x-3)^{5/2} + C$ T

5. Solve the following integral, THE STEPS OF YOUR PROCEDURE.

$$\int \frac{x^2-3x+1}{x^2-1} dx$$

20

$$\frac{x^2-3x+1}{x^2-1} = \frac{x^2-1-3x+2}{x^2-1} = 1 - \frac{3x-2}{x^2-1}$$

$$= 1 - \frac{3x-2}{(x-1)(x+1)}$$

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$$\frac{3x-2}{(x-1)(x+1)} = \frac{A}{x-1} + \frac{B}{x+1}$$

$$3x-2 = A(x+1) + B(x-1)$$

$$3x-2 = Ax + A + Bx - B$$

$$3x-2 = (A+B)x + (A-B)$$

$$\begin{cases} A+B=3 \\ A-B=-2 \end{cases}$$

$$2A=1 \Rightarrow A=\frac{1}{2}$$

$$B=3-\frac{1}{2}=\frac{5}{2}$$

$$\frac{3x-2}{(x-1)(x+1)} = \frac{1/2}{x-1} + \frac{5/2}{x+1}$$

$$\int \frac{x^2-3x+1}{x^2-1} dx = \int 1 dx - \int \frac{1/2}{x-1} dx - \int \frac{5/2}{x+1} dx$$

$$= x - \frac{1}{2} \ln|x-1| - \frac{5}{2} \ln|x+1| + C$$

Calculus II
 QUIZ # 1A PARTIAL
 Name: Cristian Humberto Arce Frans 7/6 ID: 26033001 DATE: 13

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (1.25 pts each one)

Evaluate the integral.

- 1) $\int -9x \cos 5x dx$ A
 - A) $-\frac{9}{25} \cos 5x - \frac{9}{25} \sin 5x + C$
 - B) $-\frac{9}{25} \cos 5x - \frac{9}{25} \sin 9x + C$
 - C) $-\frac{9}{25} \cos 5x - \frac{9}{25} \sin 5x + C$
 - D) $-\frac{9}{25} \cos 5x - 9x \sin 5x + C$
- 2) $\int 23x \sin x dx$ C
 - A) $23 \sin x - 23 \cos x + C$
 - B) $23 \sin x - 23x \cos x + C$
 - C) $23 \sin x - 23x \cos x + C$
 - D) $23 \sin x - x \cos x + C$
- 3) $\int e^{5x} \cos 4x dx$ C
 - A) $\frac{e^{5x}}{41} (\sin 4x + \cos 4x) + C$
 - B) $\frac{1}{41} [4 e^{5x} \sin 4x + 5 \cos 4x] + C$
 - C) $\frac{e^{5x}}{41} [4 \sin 4x + 5 \cos 4x] + C$
 - D) $\frac{e^{5x}}{41} [4 \sin 4x - 5 \cos 4x] + C$
- 4) $\int x^3 \cos 3x dx$ A
 - A) $\frac{1}{3} x^3 \sin 3x - \frac{1}{3} x^2 \cos 3x + \frac{2}{3} x \sin 3x - \frac{2}{27} \cos 3x + C$
 - B) $\frac{1}{3} x^3 \sin 3x + 1 x^2 \cos 3x - 2x \sin 3x - 2 \cos 3x + C$
 - C) $\frac{1}{3} x^3 \sin 3x + \frac{1}{3} x^2 \cos 3x - \frac{2}{3} x \sin 3x - \frac{2}{27} \cos 3x + C$
 - D) $\frac{1}{3} x^3 \cos 3x + \frac{1}{3} x^2 \sin 3x - \frac{2}{9} x \cos 3x - \frac{2}{27} \sin 3x + C$
- 5) $\int x^3 \ln 8x dx$ D
 - A) $\frac{1}{4} x^4 \ln 8x - \frac{1}{16} x^4 + C$
 - B) $\ln 8x - \frac{1}{4} x^4 + C$
 - C) $\frac{1}{4} x^4 \ln 8x + \frac{1}{16} x^4 + C$
 - D) $\frac{1}{4} x^4 \ln 8x - \frac{1}{20} x^5 + C$

Calculus II
 QUIZ # 1A PARTIAL
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MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. (1.25 pts each one)

Evaluate the integral.

- 1) $\int_0^1 6x \ln x dx$ A
 - A) $40/2$
 - B) $6/70$
 - C) $55/2$
 - D) $9/48$
- 2) $\int_0^1 x^2 e^{2x} dx$ B
 - A) $\frac{3}{4} x e^{-4x} - \frac{11}{16} e^{-4x} + C$
 - B) $\frac{3}{4} x e^{-4x} - e^{-4x} + C$
 - C) $-12x e^{-4x} - 56 e^{-4x} + C$
 - D) $\frac{3}{4} x e^{-4x} + \frac{11}{16} e^{-4x} + C$
- 3) $\int_0^1 x^3 e^{-2x} dy$ A
 - A) $2y \left[\frac{1}{2} x^3 + \frac{3}{2} x^2 + \frac{3}{2} x + \frac{3}{8} \right] + C$
 - B) $2y \left[\frac{1}{2} x^3 + \frac{3}{2} x^2 + \frac{3}{2} x + \frac{3}{8} \right] + C$
 - C) $-\frac{1}{8} x^4 e^{-2x} + C$
 - D) $-\frac{1}{2} e^{-2x} (3x^3 + 3x^2 + y + 6) + C$