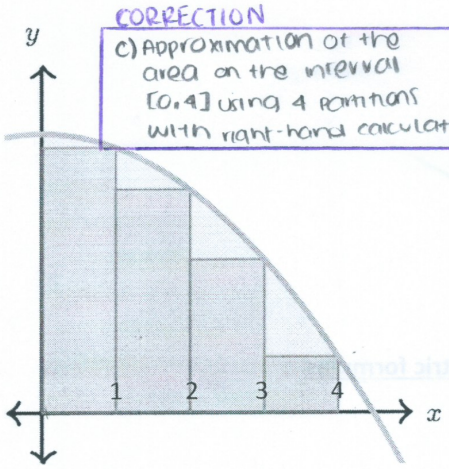
Prepa Tec Campus Cumbres
Calculus II
1st partial Quiz # 2B

Name Alexandra Islas I.D. A01570159

I. 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 $f(x)$:



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

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 $[1,5]$ 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 $[1,5]$ using 4 partitions with left-hand calculations. ✗

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

$\int_2^4 x\,dx = 7$ $\int_2^4 x^3\,dx = 24$ $\int_2^4 dx = 4$

a. $\int_2^4 (2x^3 + 5x + 3)dx =$ 95

b. $\int_2^4 20\,dx =$ 80

c. $\int_5^5 x^3\,dx =$ 0

d. $\int_4^2 x\,dx =$ -7

a. $2\int_2^4 x^3dx + 5\int_2^4 x\,dx + 3\int_2^4 dx$
$= (2)(24) + (5)(7) + (3)(4)$
$= 48 + 35 + 12 = 95$

b. $20\int_2^4 dx = (20)(4) = 80$

c. $\int_5^5 x^3dx = 0$

d. $-\int_2^4 x\,dx = -(7) = -7$

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) = 14.3302
Area (Right hand) = 21.08 u²

$4 = \frac{0+3}{\Delta x}$
$\Delta x = 3/4$
$\Delta x = 0.75$

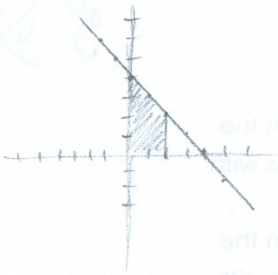
left: 14.33 u²
Right: 21.08 u²

$(0.75)f(-3) = 0$
$(0.75)f(-2.25) = 2.95$
$(0.75)f(-1.5) = 5.06$
$(0.75)f(-0.75) = 6.32$
$(0.75)f(0) = 6.75$

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

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

<u>Graph</u>



<u>Procedure by geometric formulas</u>

$A_1 = (2)(2)$

$A_1 = 4$

$A_2 = \frac{(2)(2)}{2}$

$A_2 = 2$

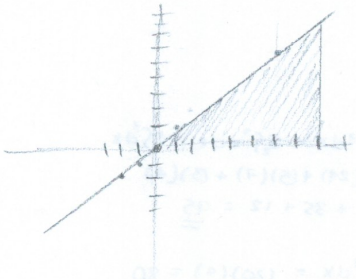
$A_1 + A_2 = 4+2$

$A = 6u^2$

x	y
-2	6
-1	5
0	4
1	3
2	2
3	1

3) $\int_0^8 \frac{x}{4}\,dx$

<u>Graph</u>



<u>Procedure by geometric formulas</u>

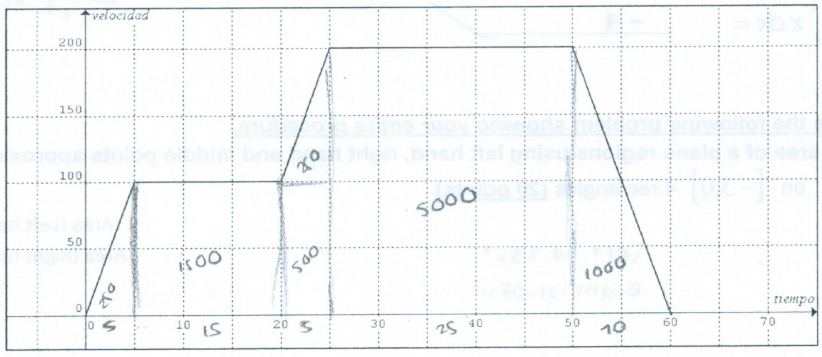
$A_1 = \frac{(8)(2)}{2}$

$A_1 = 8$

$A = 8u^2$

x	y
-2	-0.5
-1	-0.25
0	0
1	0.25
2	0.5
3	0.75
4	1
5	1.25
6	1.5
7	1.75
8	2

3) **Based on the following graph <u>evaluate</u> the given definite integrals (5 points each):**



1. $\int_0^5 f(x)dx$ — $\frac{(5)(100)}{2} = 250$ — $250\,u^2$

2. $\int_5^{20} f(x)dx$ — $(15)(100)$ — $1500\,u^2$

3. $\int_5^{50} f(x)dx$ — $1500 + 450 + 5000$ — $7250\,u^2$

4. $\int_0^{60} f(x)dx$ — $7250 + 1000 + 250$ — $8500\,u^2$

$(15)(100) = 1500$ $(5)(100) = 500$ $(45)(200) = 5{,}000$ $\frac{(10)(200)}{2} = 1000$