Nombre de alumnos: Sili Morelia Pérez Escobedo

Nombre del profesor: Jorge Enrique Albores Aguilar

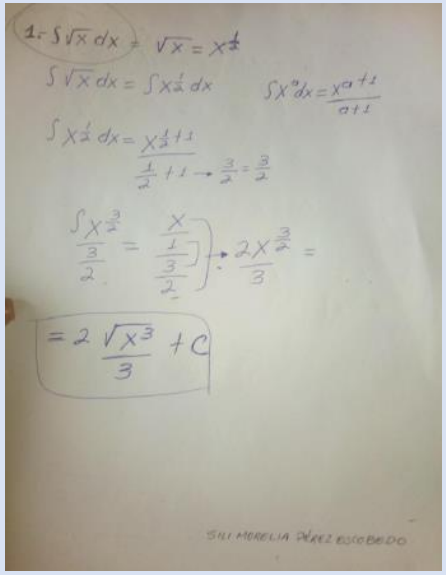
Nombre del trabajo: Integrales

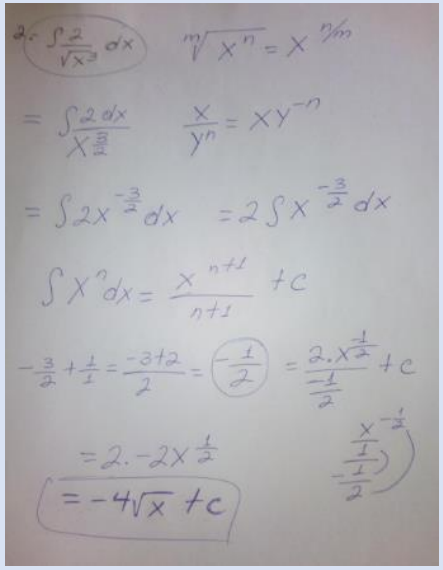
Materia: Matemáticas aplicada

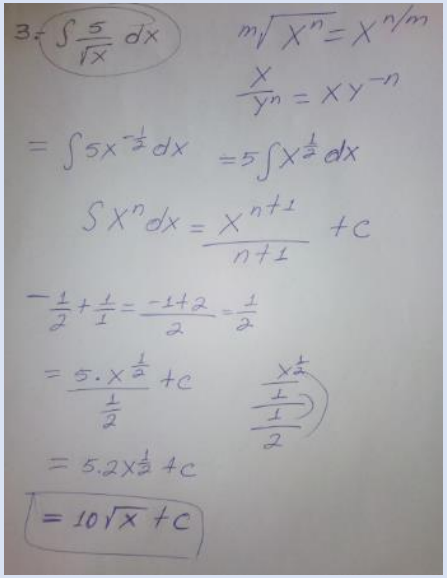
Grado: 6to cuatrimestre

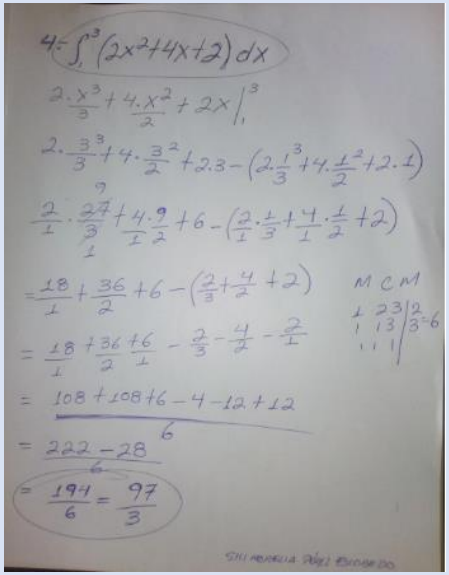
Grupo: “A”

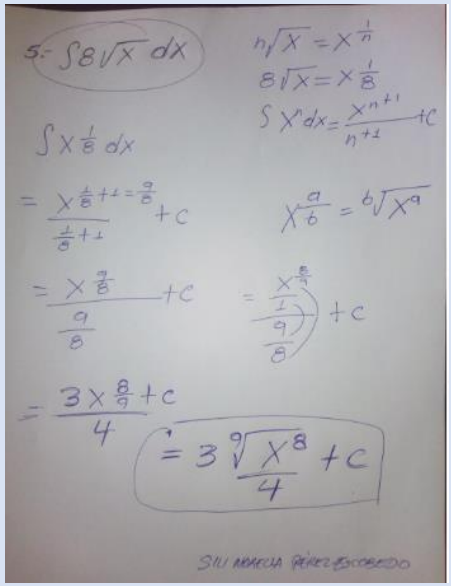
Comitán de Domínguez Chiapas a 22 de mayo de 2022.

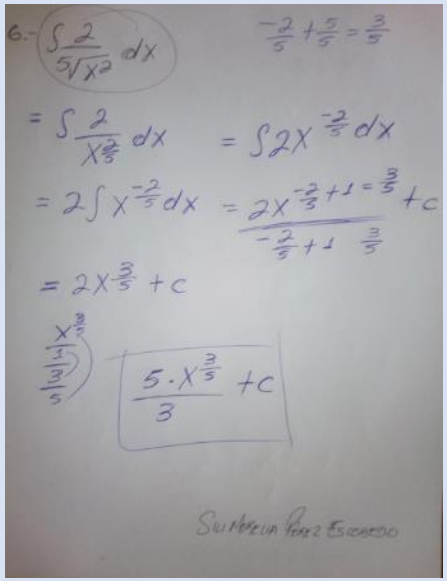

1.- $\int \sqrt{x}\,dx$
$\sqrt{x} = x^{\frac{1}{2}}$
$\int \sqrt{x}\,dx = \int x^{\frac{1}{2}}\,dx$
$\int x^a dx = \frac{x^{a+1}}{a+1}$
$\int x^{\frac{1}{2}}\,dx = \frac{x^{\frac{1}{2}+1}}{\frac{1}{2}+1} \rightarrow \frac{3}{2} = \frac{3}{2}$
$\frac{\int x^{\frac{3}{2}}}{\frac{3}{2}} = \frac{x}{\frac{3}{2}} \rightarrow \frac{2x^{\frac{3}{2}}}{3} =$
$= 2\frac{\sqrt{x^3}}{3} + C$
SILI MORELIA PÉREZ ESCOBEDO

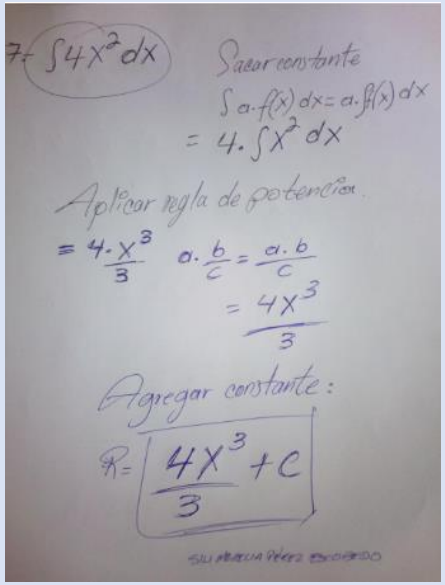

2.- $\int \frac{2}{\sqrt{x^3}}\,dx$
$\sqrt[m]{x^n} = x^{n/m}$
$= \int \frac{2\,dx}{x^{\frac{3}{2}}}$
$\frac{x}{y^n} = xy^{-n}$
$= \int 2x^{-\frac{3}{2}}\,dx = 2\int x^{-\frac{3}{2}}\,dx$
$\int x^n dx = \frac{x^{n+1}}{n+1} + C$
$-\frac{3}{2} + \frac{1}{1} = \frac{-3+2}{2} = -\frac{1}{2} = \frac{2.x^{\frac{1}{2}}}{-\frac{1}{2}} + C$
$= 2.-2x^{\frac{1}{2}}$
$= -4\sqrt{x} + C$

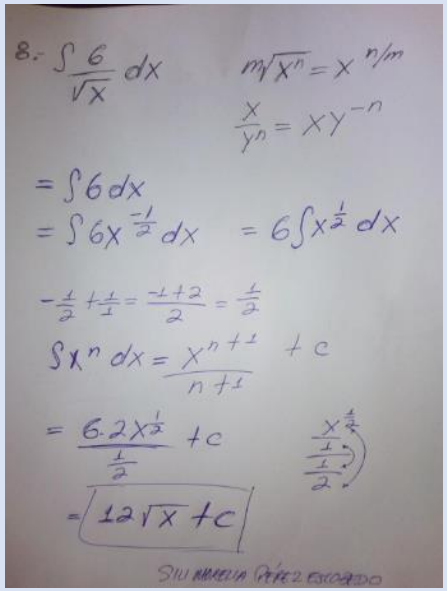

3.- $\int \frac{5}{\sqrt{x}}\,dx$
$\sqrt[m]{x^n} = x^{n/m}$
$\frac{x}{y^n} = xy^{-n}$
$= \int 5x^{-\frac{1}{2}}\,dx = 5\int x^{\frac{1}{2}}\,dx$
$\int x^n dx = \frac{x^{n+1}}{n+1} + C$
$-\frac{1}{2} + \frac{1}{1} = \frac{-1+2}{2} = \frac{1}{2}$
$= 5.\frac{x^{\frac{1}{2}}}{\frac{1}{2}} + C$
$= 5.2x^{\frac{1}{2}} + C$
$= 10\sqrt{x} + C$


4.- $\int_1^3 (2x^2+4x+2)\,dx$
$2.\frac{x^3}{3} + 4.\frac{x^2}{2} + 2x \Big|_1^3$
$2.\frac{3^3}{3} + 4.\frac{3^2}{2} + 2.3 - \left(2.\frac{1^3}{3} + 4.\frac{1^2}{2} + 2.1\right)$
$\frac{2}{1}.\frac{27}{3} + \frac{4}{1}.\frac{9}{2} + 6 - \left(\frac{2}{1}.\frac{1}{3} + \frac{4}{1}.\frac{1}{2} + 2\right)$
$= \frac{18}{1} + \frac{36}{2} + 6 - \left(\frac{2}{3} + \frac{4}{2} + 2\right)$
MCM 1, 2, 3, 1, 3, 2, 3 = 6
$= \frac{18}{1} + \frac{36}{2} + \frac{6}{1} - \frac{2}{3} - \frac{4}{2} - \frac{2}{1}$
$= \frac{108 + 108 + 6 - 4 - 12 + 12}{6}$
$= \frac{222 - 28}{6}$
$= \frac{194}{6} = \frac{97}{3}$


5.- $\int 8\sqrt{x}\,dx$
$\sqrt[n]{x} = x^{\frac{1}{n}}$
$8\sqrt{x} = x^{\frac{1}{8}}$
$\int x^n dx = \frac{x^{n+1}}{n+1} + C$
$\int x^{\frac{1}{8}}\,dx$
$= \frac{x^{\frac{1}{8}+1}}{\frac{1}{8}+1} + C$
$x^{\frac{a}{b}} = \sqrt[b]{x^a}$
$= \frac{x^{\frac{9}{8}}}{\frac{9}{8}} + C = \frac{x^{\frac{9}{8}}}{\frac{9}{8}} + C$
$= \frac{3x^{\frac{8}{9}} + C}{4}$
$= 3\frac{\sqrt[9]{x^8}}{4} + C$
SILI MORELIA PÉREZ ESCOBEDO


6.- $\int \frac{2}{5\sqrt{x^2}}\,dx$
$-\frac{2}{5} + \frac{5}{5} = \frac{3}{5}$
$= \int \frac{2}{x^{\frac{2}{5}}}\,dx = \int 2x^{-\frac{2}{5}}\,dx$
$= 2\int x^{-\frac{2}{5}}\,dx = 2\frac{x^{-\frac{2}{5}+1 = \frac{3}{5}}}{-\frac{2}{5}+1} + C$
$= 2x^{\frac{3}{5}} + C$
$\frac{x^{\frac{3}{5}}}{\frac{3}{5}}$
$\frac{5.x^{\frac{3}{5}}}{3} + C$
SILI MORELIA PÉREZ ESCOBEDO


7.- $\int 4x^2\,dx$
Sacar constante
$\int a.f(x)\,dx = a.\int f(x)\,dx$
$= 4.\int x^2\,dx$
Aplicar regla de potencias
$= 4.\frac{x^3}{3}$
$a.\frac{b}{c} = \frac{a.b}{c}$
$= \frac{4x^3}{3}$
Agregar constante:
R= $\frac{4x^3}{3} + C$
SILI MORELIA PÉREZ ESCOBEDO


8.- $\int \frac{6}{\sqrt{x}}\,dx$
$\sqrt[m]{x^n} = x^{n/m}$
$\frac{x}{y^n} = xy^{-n}$
$= \int 6\,dx$
$= \int 6x^{-\frac{1}{2}}\,dx = 6\int x^{\frac{1}{2}}\,dx$
$-\frac{1}{2} + \frac{1}{1} = \frac{-1+2}{2} = \frac{1}{2}$
$\int x^n dx = \frac{x^{n+1}}{n+1} + C$
$= \frac{6.2x^{\frac{1}{2}}}{\frac{1}{2}} + C$
$= 12\sqrt{x} + C$
SILI MORELIA PÉREZ ESCOBEDO

9.- $\int 4(2x^3+2x)\,dx$

$= \int (8x^3+8x)\,dx$

$= \int 8x^3\,dx + \int 8x\,dx$

$= 6\int x^3\,dx + 8\int x\,dx$

$= 6\cdot\frac{x^4}{4} + 8\cdot\frac{x^2}{2} + c$

$\int x^n = \frac{x^{n+1}}{n+1} + c$

$= \frac{6x^4}{4} + 4x^2 + c$

Sili Marcela Perez Estrada

10.- $\int \sqrt{x^5}\,dx$

$\int x^{\frac{5}{2}}\,dx$ $\qquad \int x^a\,dx = \frac{x^{a+1}}{a+1}$

$= \frac{x^{\frac{5}{2}+1}}{\frac{5}{2}+1}$ $\qquad \frac{5}{2}+\frac{2}{2} = \frac{7}{2}$

$= \frac{x^{\frac{7}{2}}}{\frac{7}{2}} = \frac{x^{\frac{7}{2}}}{\frac{1}{\frac{7}{2}}} = 2x^{\frac{7}{2}} = \frac{2\sqrt{x^7}}{7} + c$

$= \frac{2\sqrt{x^7}+c}{7}$