Ensayo

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Nombre del tema: Reporte de actividades.

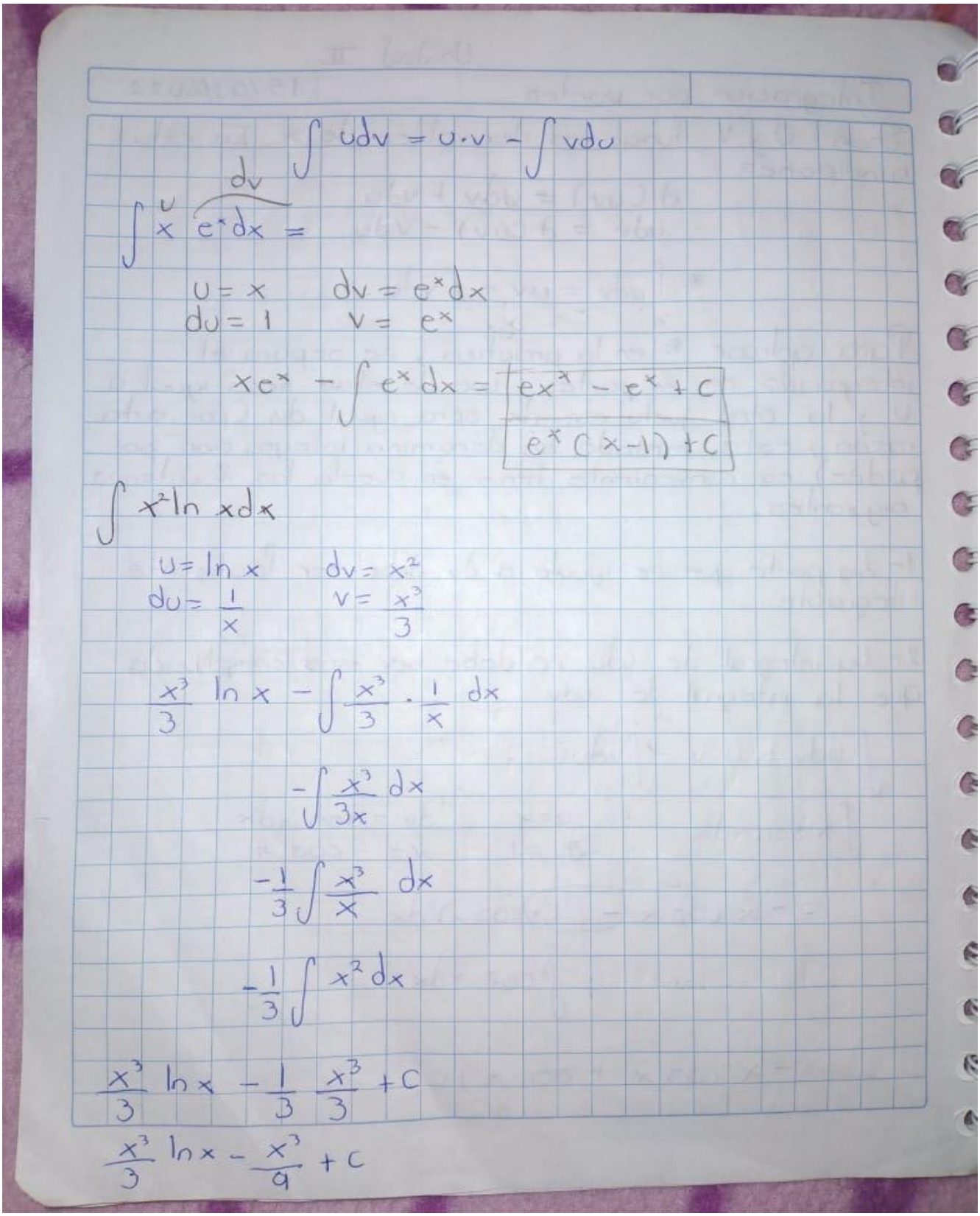
Parcial: II

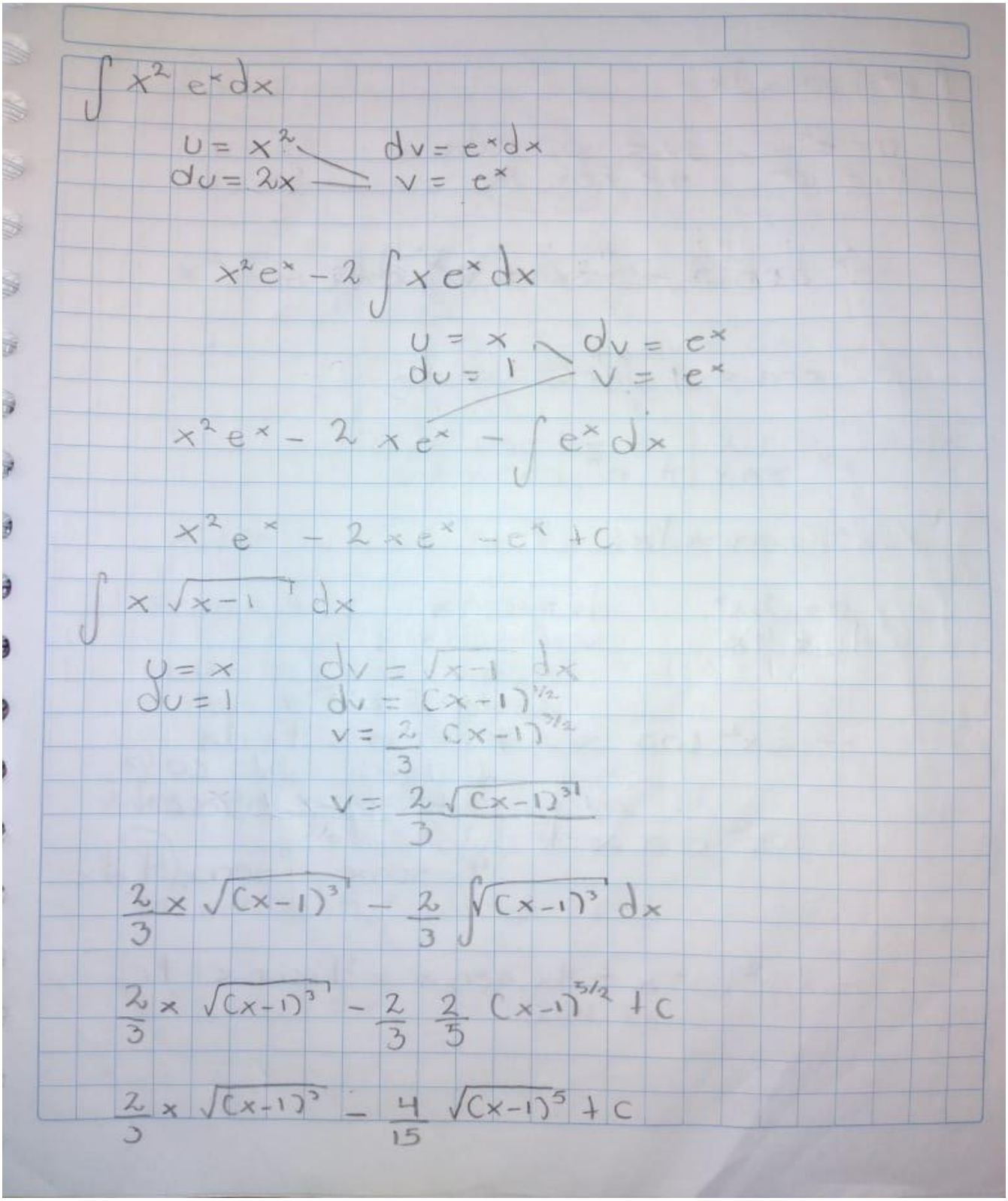
Nombre de la Materia: Matemática aplicada.

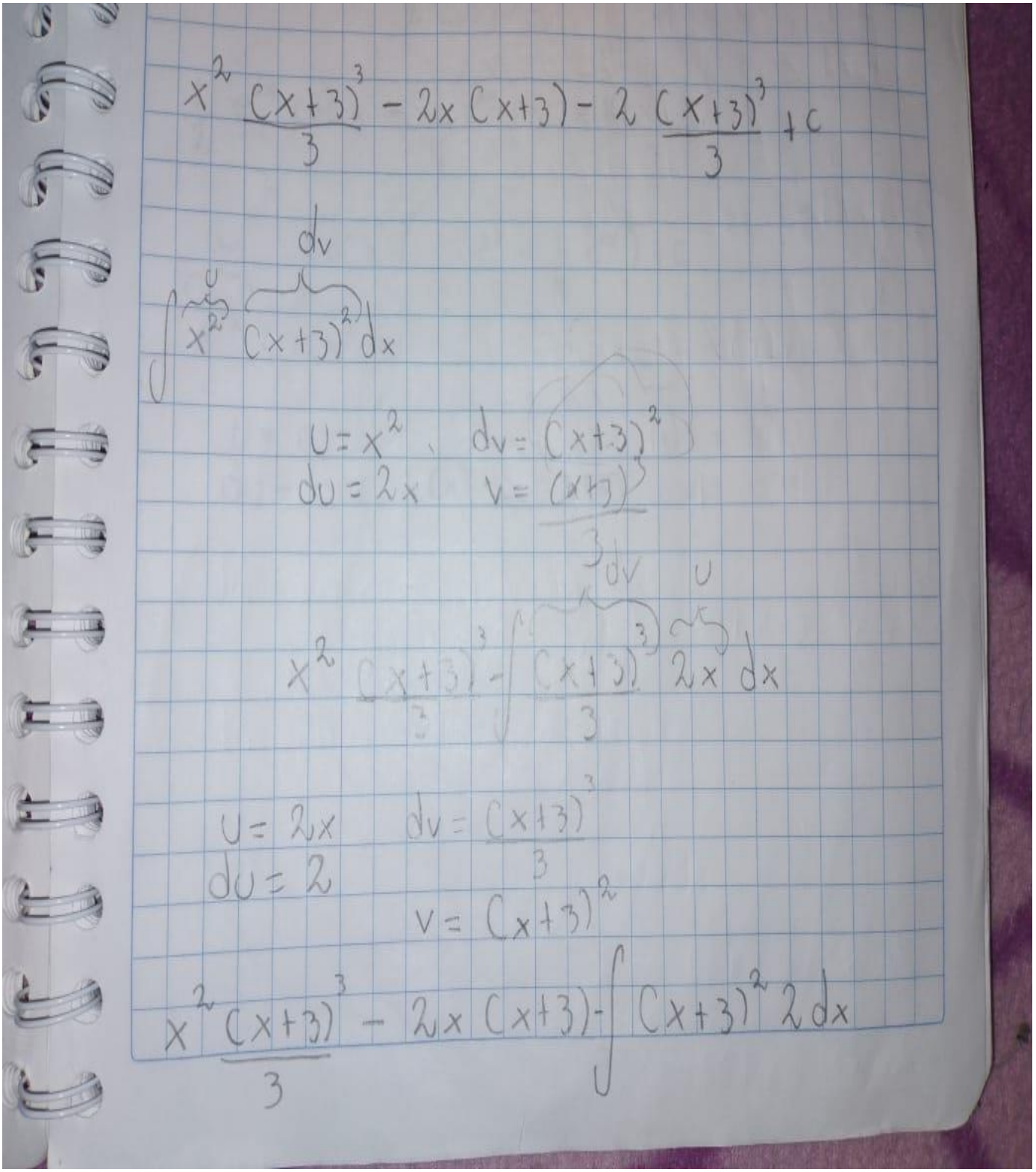
Nombre del profesor: Juan Jose Ojeda.

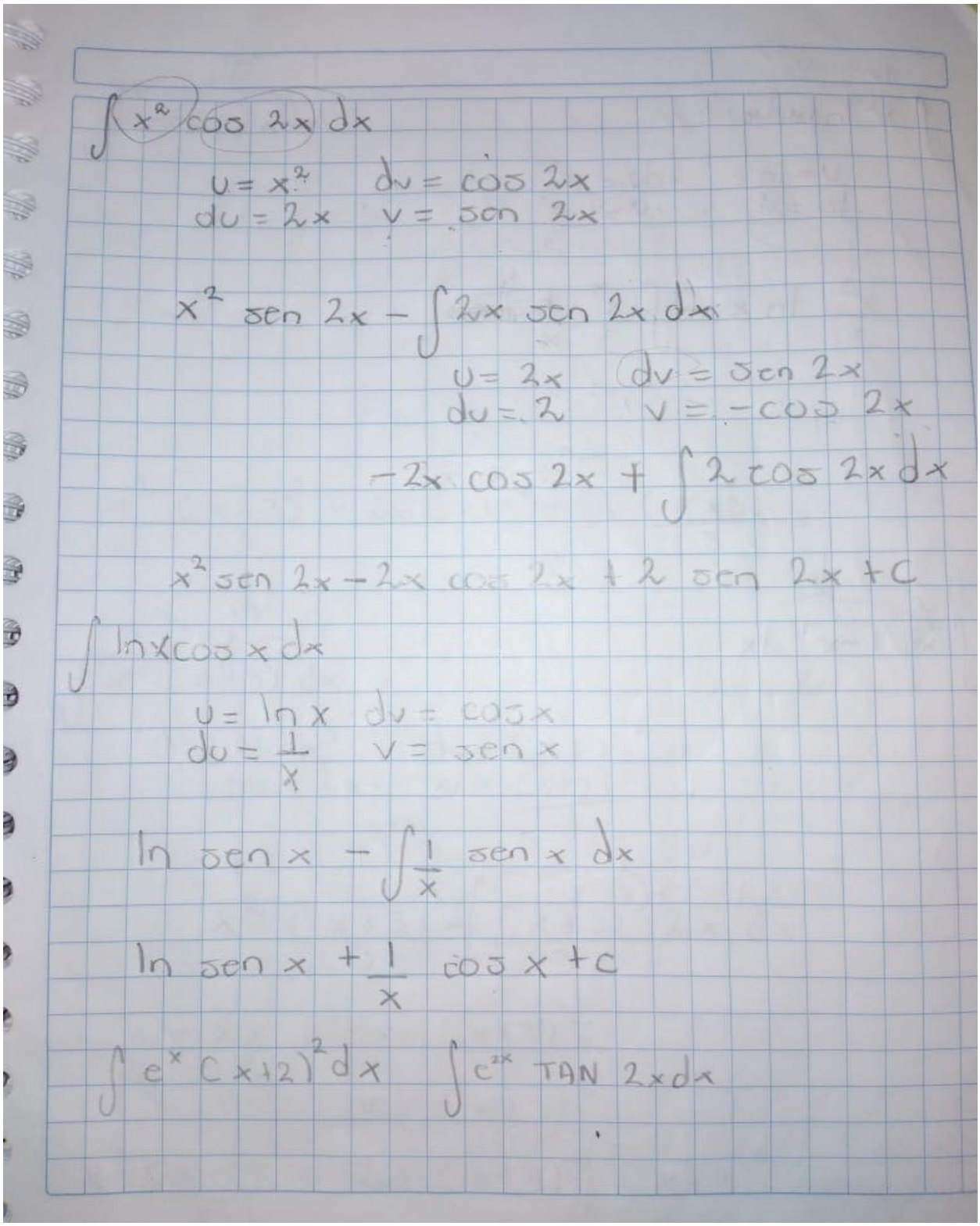
Nombre de la Licenciatura: Bachillerato en enfermería.

Cuatrimestre: 6° semestre.


$\int udv = u \cdot v - \int vdu$
$\int x \overbrace{e^x dx}^{dv} =$
$u = x \quad dv = e^x dx$
$du = 1 \quad v = e^x$
$xe^x - \int e^x dx = ex^x - e^x + C$
$e^x(x-1) + C$
$\int x^2 \ln x \, dx$
$u = \ln x \quad dv = x^2$
$du = \frac{1}{x} \quad v = \frac{x^3}{3}$
$\frac{x^3}{3} \ln x - \int \frac{x^3}{3} \cdot \frac{1}{x} dx$
$-\int \frac{x^3}{3x} dx$
$-\frac{1}{3}\int \frac{x^3}{x} dx$
$-\frac{1}{3}\int x^2 dx$
$\frac{x^3}{3} \ln x - \frac{1}{3} \frac{x^3}{3} + C$
$\frac{x^3}{3} \ln x - \frac{x^3}{9} + C$


$\int x^2 e^x dx$
$u = x^2$ $dv = e^x dx$
$du = 2x$ $v = e^x$
$x^2 e^x - 2\int x e^x dx$
$u = x$ $dv = e^x$
$du = 1$ $v = e^x$
$x^2 e^x - 2 x e^x - \int e^x dx$
$x^2 e^x - 2 x e^x - e^x + C$
$\int x\sqrt{x-1}\, dx$
$u = x$ $dv = \sqrt{x-1}\, dx$
$du = 1$ $dv = (x-1)^{1/2}$
$v = \frac{2}{3}(x-1)^{3/2}$
$v = \frac{2\sqrt{(x-1)^3}}{3}$
$\frac{2}{3} x \sqrt{(x-1)^3} - \frac{2}{3}\int \sqrt{(x-1)^3}\, dx$
$\frac{2}{3} x \sqrt{(x-1)^3} - \frac{2}{3}\frac{2}{5}(x-1)^{5/2} + C$
$\frac{2}{3} x \sqrt{(x-1)^3} - \frac{4}{15}\sqrt{(x-1)^5} + C$


$x^2\frac{(x+3)^3}{3} - 2x(x+3) - 2\frac{(x+3)^3}{3} + C$
$\int x^2 (x+3)^2 dx$
$u = x^2 \quad dv = (x+3)^2$
$du = 2x \quad v = \frac{(x+3)^3}{3}$
$x^2\frac{(x+3)^3}{3} - \int \frac{(x+3)^3}{3} 2x\,dx$
$u = 2x \quad dv = \frac{(x+3)^3}{3}$
$du = 2 \quad v = (x+3)^2$
$x^2\frac{(x+3)^3}{3} - 2x(x+3) - \int (x+3)^2 2\,dx$



$$\int x^2 \cos 2x\, dx$$

$u = x^2 \quad dv = \cos 2x$

$du = 2x \quad v = \operatorname{sen} 2x$

$$x^2 \operatorname{sen} 2x - \int 2x \operatorname{sen} 2x\, dx$$

$u = 2x \quad dv = \operatorname{sen} 2x$

$du = 2 \quad v = -\cos 2x$

$$-2x \cos 2x + \int 2 \cos 2x\, dx$$

$$x^2 \operatorname{sen} 2x - 2x \cos 2x + 2 \operatorname{sen} 2x + C$$

$$\int \ln x \cos x\, dx$$

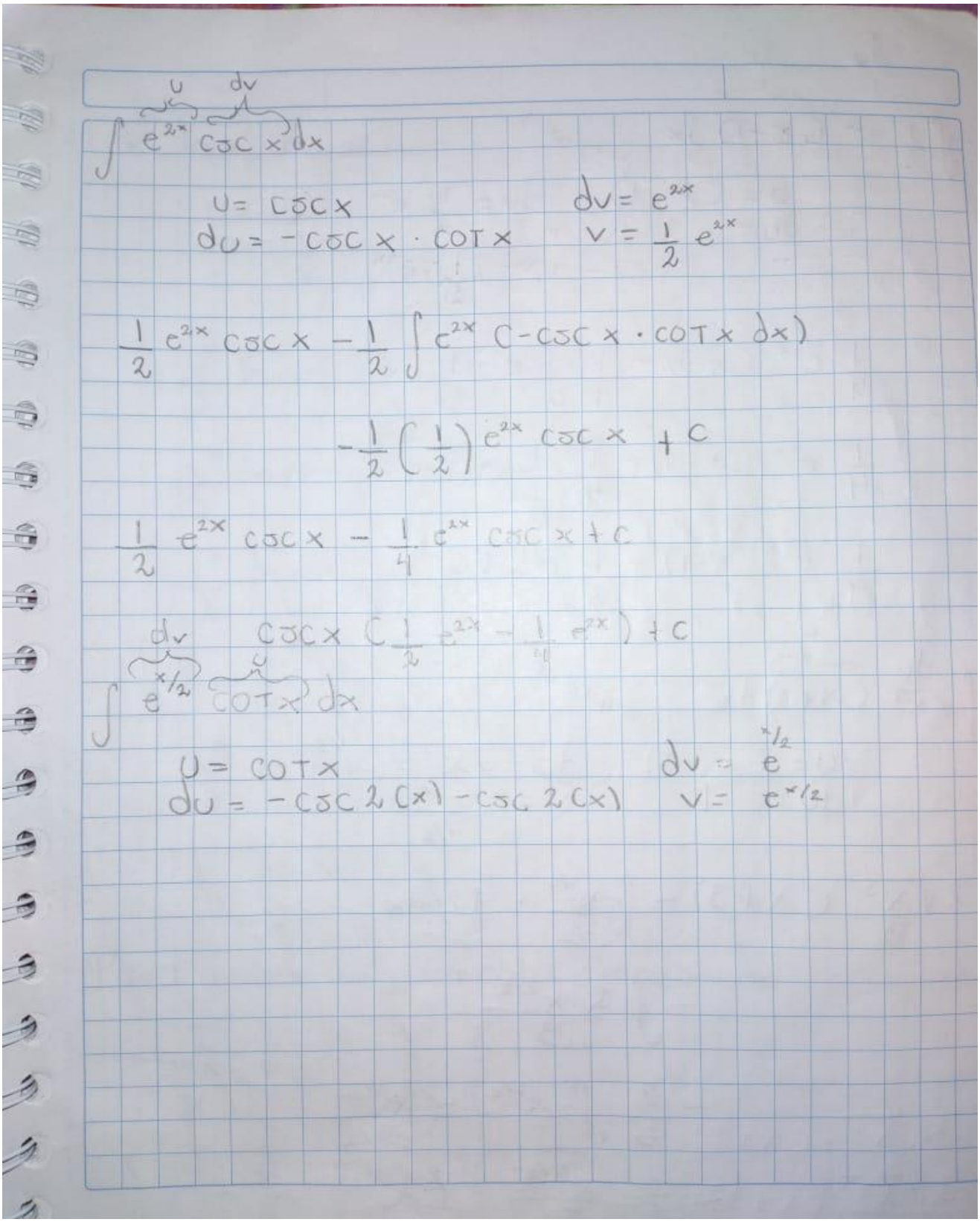
$u = \ln x \quad dv = \cos x$

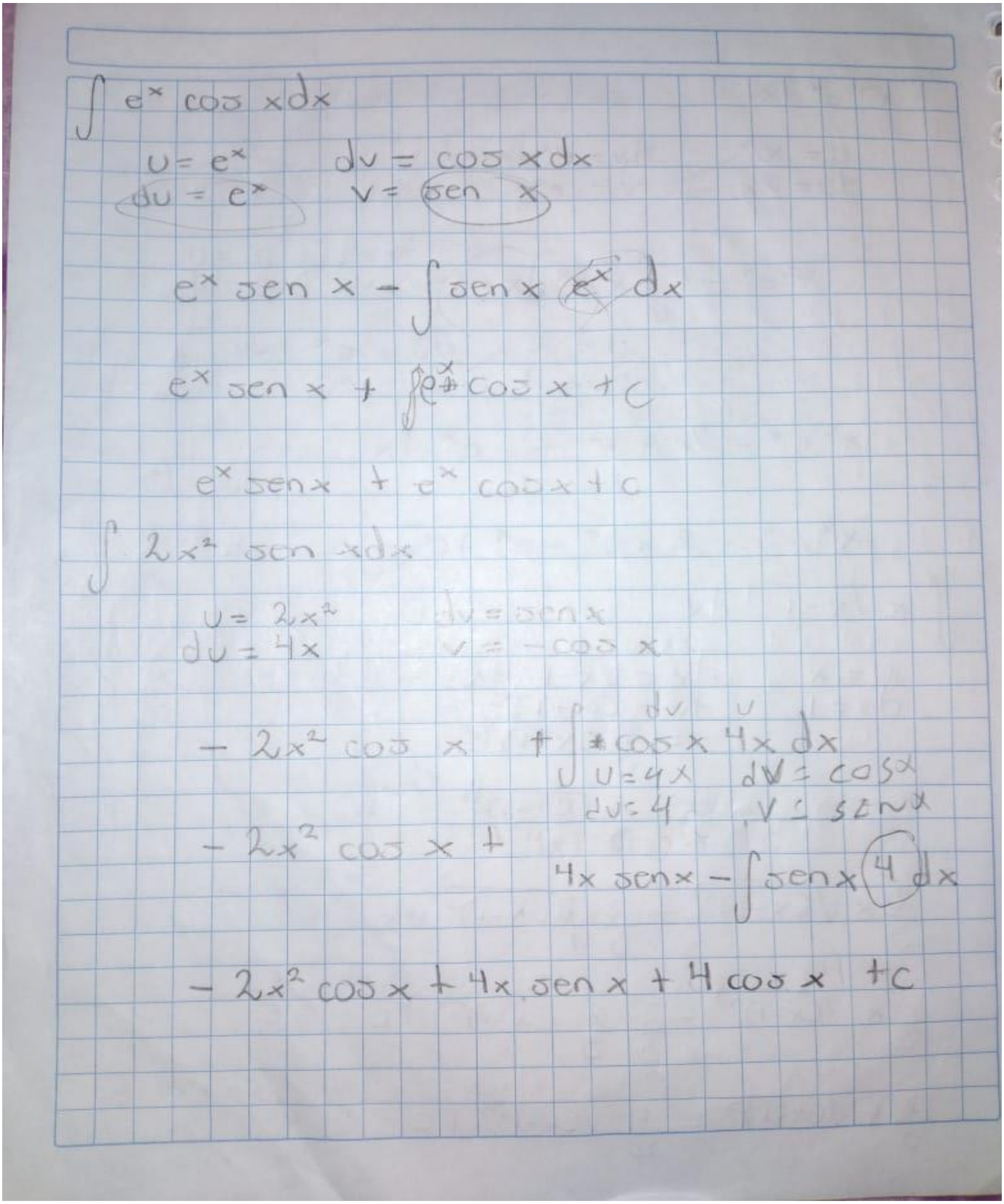
$du = \frac{1}{x} \quad v = \operatorname{sen} x$

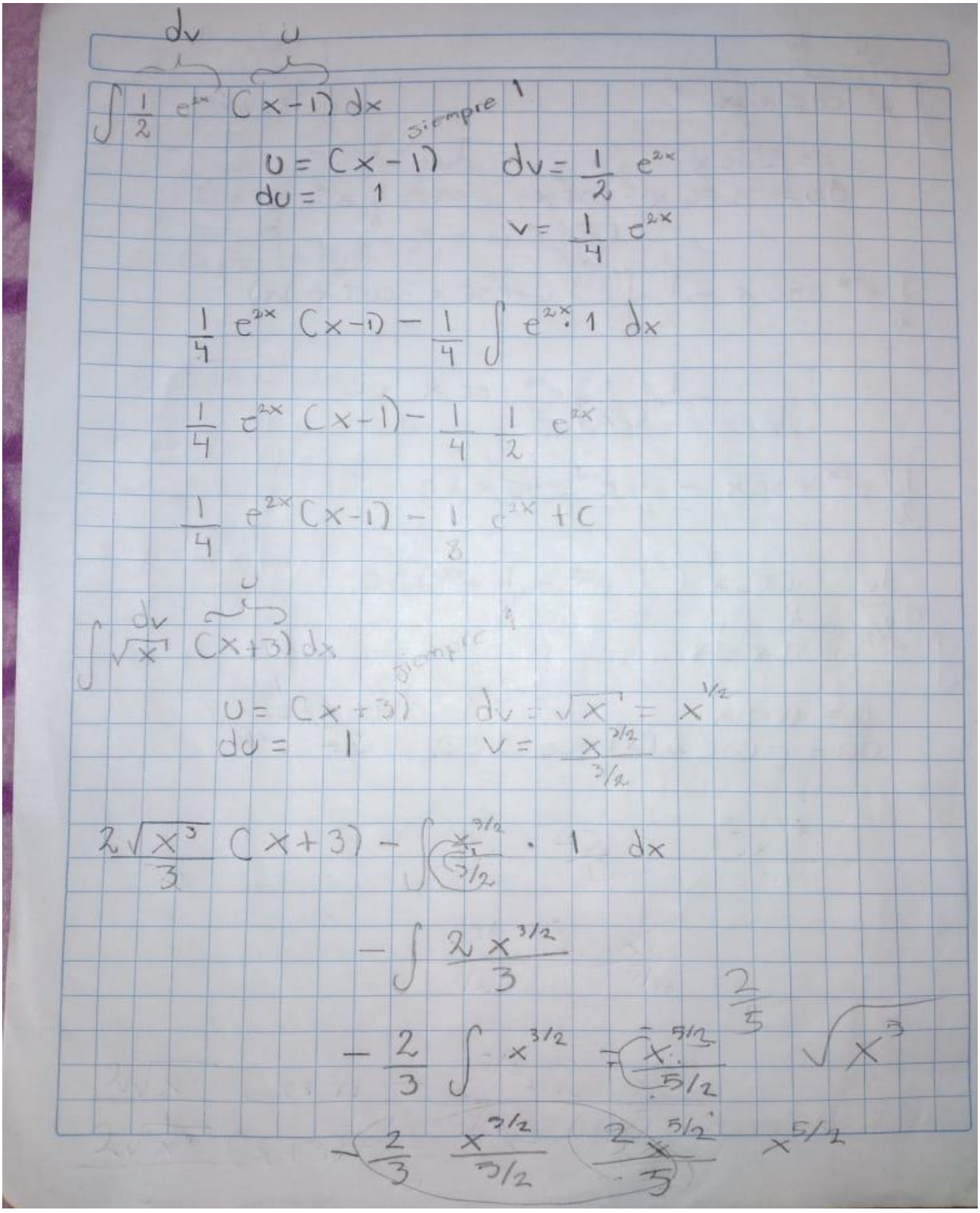
$$\ln \operatorname{sen} x - \int \frac{1}{x} \operatorname{sen} x\, dx$$

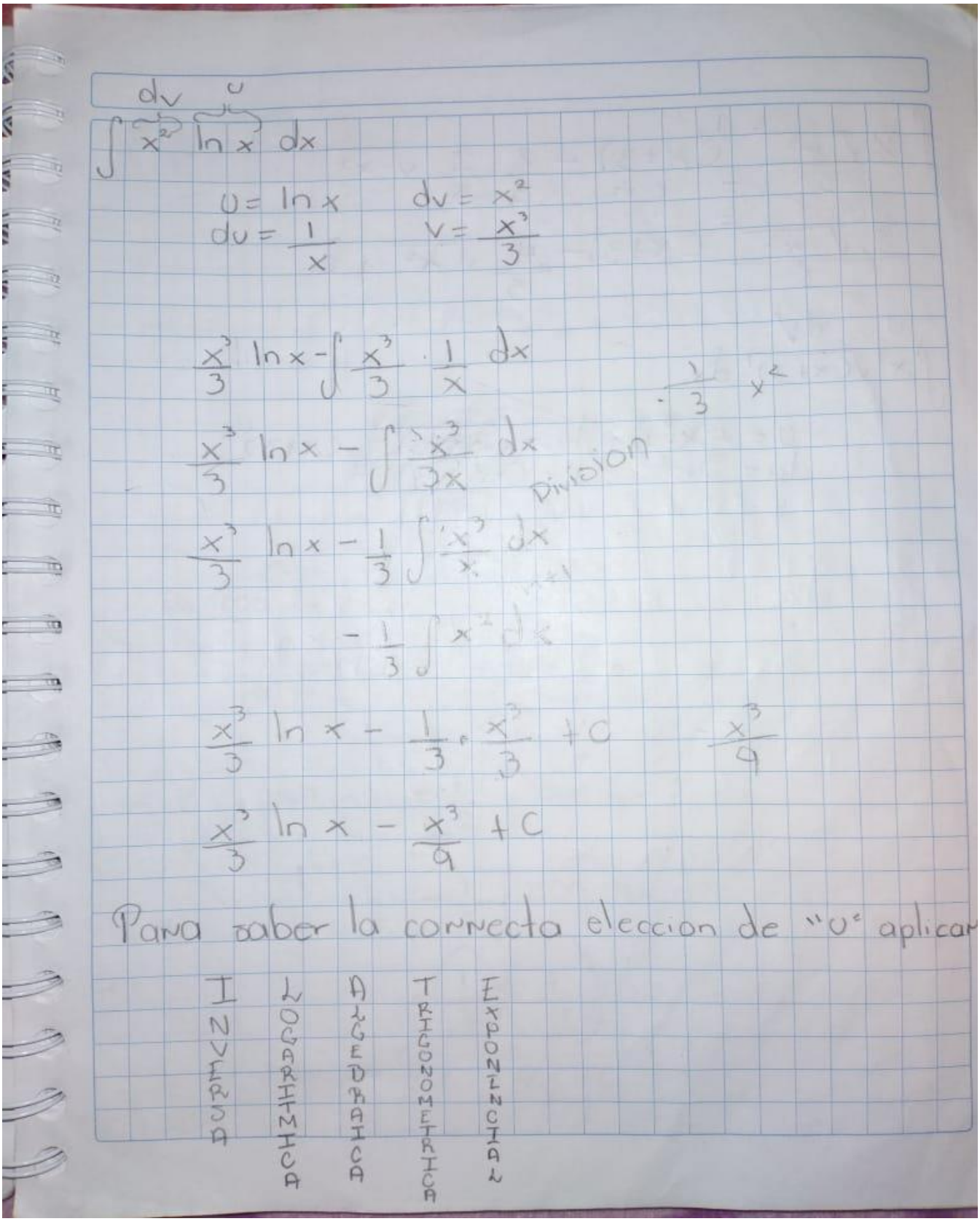
$$\ln \operatorname{sen} x + \frac{1}{x} \cos x + C$$

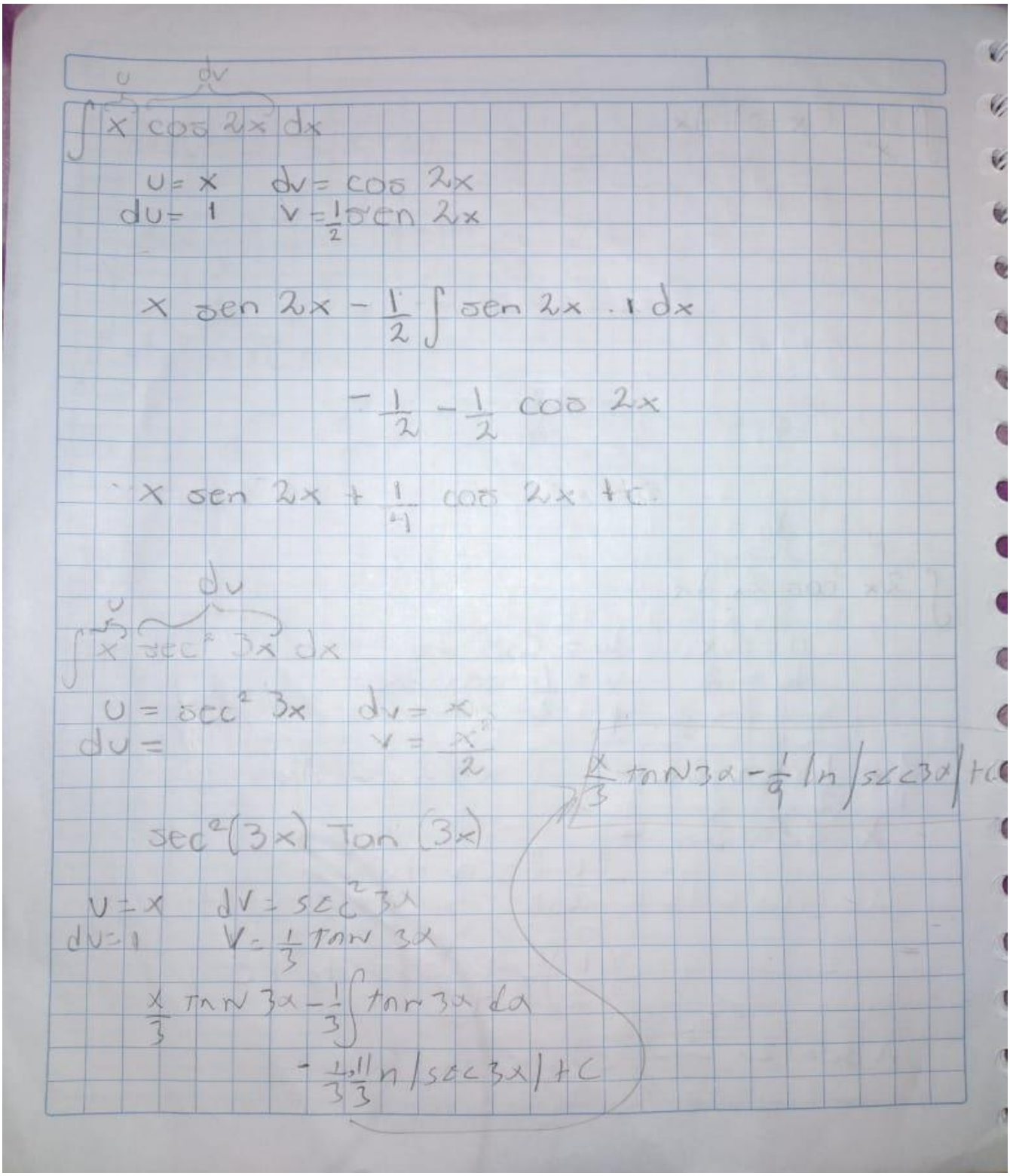
$$\int e^x (x+2)^2 dx \qquad \int e^{2x} \tan 2x\, dx$$

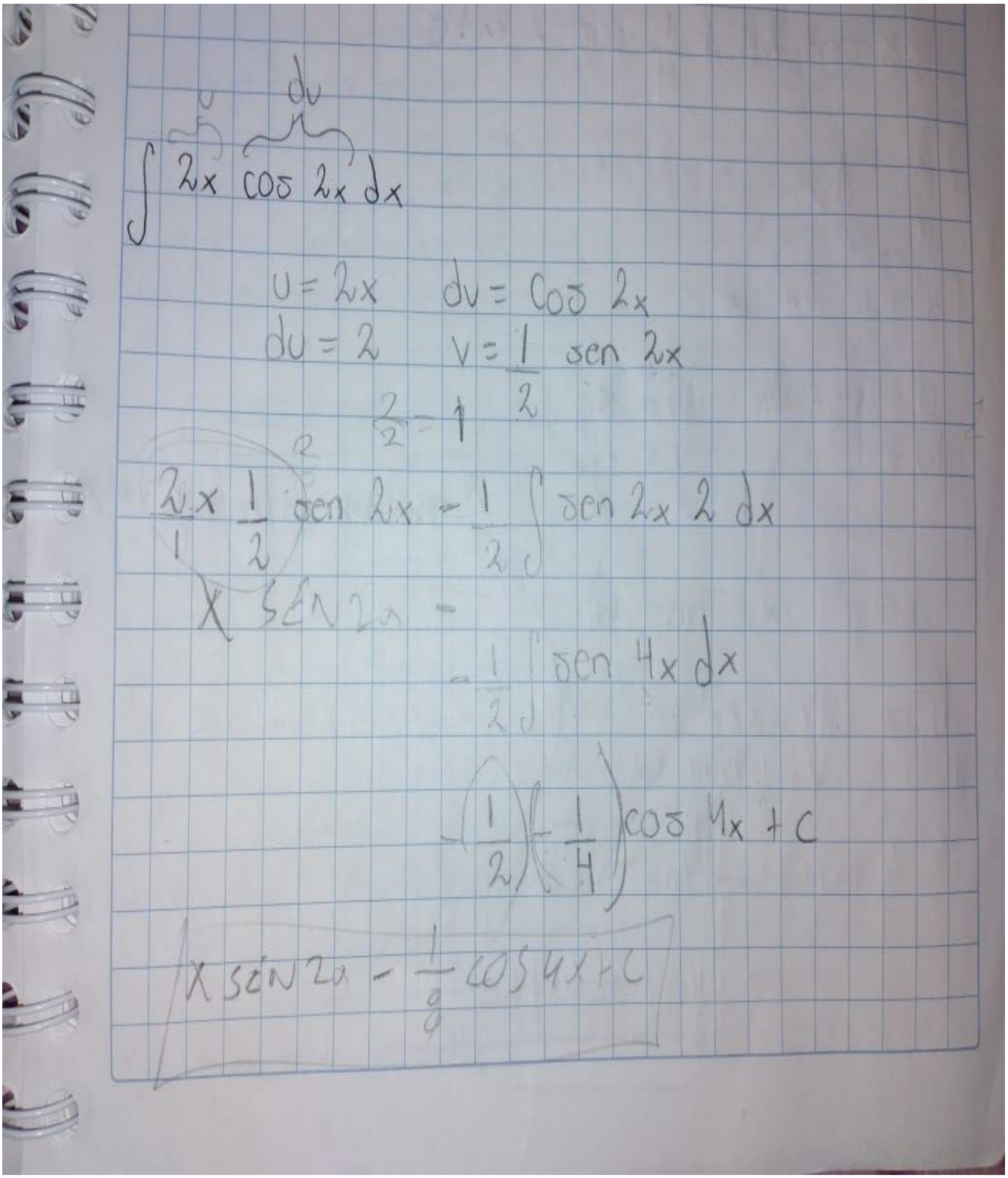

$\int e^{2x} \csc x\, dx$
$u = \csc x$ $\quad dv = e^{2x}$
$du = -\csc x \cdot \cot x$ $\quad v = \frac{1}{2} e^{2x}$
$\frac{1}{2} e^{2x} \csc x - \frac{1}{2} \int e^{2x} (-\csc x \cdot \cot x\, dx)$
$-\frac{1}{2}\left(\frac{1}{2}\right) e^{2x} \csc x + C$
$\frac{1}{2} e^{2x} \csc x - \frac{1}{4} e^{2x} \csc x + C$
$\csc x \left(\frac{1}{2} e^{2x} - \frac{1}{4} e^{2x}\right) + C$
$\int e^{x/2} \cot x\, dx$
$u = \cot x$ $\quad dv = e^{x/2}$
$du = -\csc 2(x) - \csc 2(x)$ $\quad v = e^{x/2}$

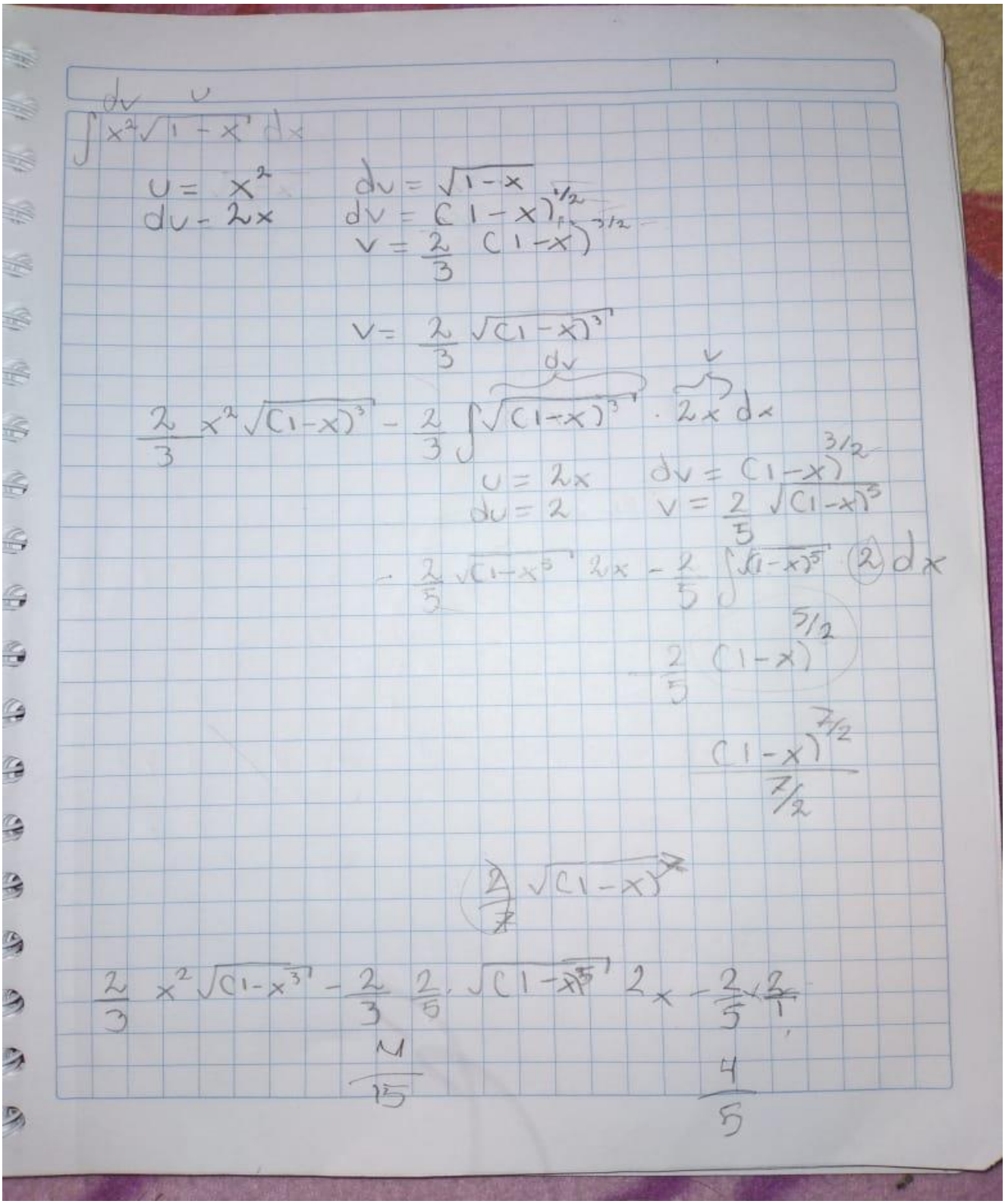

$\int e^x \cos x\,dx$
$u = e^x \quad dv = \cos x\,dx$
$du = e^x \quad v = \operatorname{sen} x$
$e^x \operatorname{sen} x - \int \operatorname{sen} x\, e^x\, dx$
$e^x \operatorname{sen} x + \int e^x \cos x + C$
$e^x \operatorname{sen} x + e^x \cos x + C$
$\int 2x^2 \operatorname{sen} x\,dx$
$u = 2x^2 \quad dv = \operatorname{sen} x$
$du = 4x \quad v = -\cos x$
$-2x^2 \cos x + \int \cos x\, 4x\, dx$
$u = 4x \quad dv = \cos x$
$du = 4 \quad v = \operatorname{sen} x$
$-2x^2 \cos x +$
$4x \operatorname{sen} x - \int \operatorname{sen} x\, 4\, dx$
$-2x^2 \cos x + 4x \operatorname{sen} x + 4 \cos x + C$


dv u
$\int \frac{1}{2} e^{2x} (x-1)\,dx$
siempre
$u = (x-1)$ $dv = \frac{1}{2} e^{2x}$
$du = 1$ $v = \frac{1}{4} e^{2x}$
$\frac{1}{4} e^{2x}(x-1) - \frac{1}{4}\int e^{2x} \cdot 1\,dx$
$\frac{1}{4} e^{2x}(x-1) - \frac{1}{4}\frac{1}{2} e^{2x}$
$\frac{1}{4} e^{2x}(x-1) - \frac{1}{8} e^{2x} + C$
$\int \frac{dv}{\sqrt{x}} \overset{u}{(x+3)}\,dx$
$u = (x+3)$ $dv = \sqrt{x}^{1} = x^{1/2}$
$du = 1$ $v = \frac{x^{3/2}}{3/2}$
$\frac{2\sqrt{x^3}}{3}(x+3) - \int \frac{x^{3/2}}{3/2} \cdot 1\,dx$
$-\int \frac{2x^{3/2}}{3}$
$-\frac{2}{3}\int x^{3/2} = \frac{x^{5/2}}{5/2}$
$\frac{2}{5}\sqrt{x^5}$
$-\frac{2}{3}\frac{x^{3/2}}{3/2}$ $\frac{2}{3}\frac{x^{5/2}}{5}$ $x^{5/2}$


dv u
$\int x^2 \ln x \, dx$
$u = \ln x \quad dv = x^2$
$du = \frac{1}{x} \quad v = \frac{x^3}{3}$
$\frac{x^3}{3}\ln x - \int \frac{x^3}{3} \cdot \frac{1}{x} dx$
$\cdot \frac{1}{3} \quad x^2$
$\frac{x^3}{3}\ln x - \int \frac{x^3}{3x} dx$
División
$\frac{x^3}{3}\ln x - \frac{1}{3}\int \frac{x^3}{x} dx$
$-\frac{1}{3}\int x^2 dx$
$\frac{x^3}{3}\ln x - \frac{1}{3} \cdot \frac{x^3}{3} + C \qquad \frac{x^3}{9}$
$\frac{x^3}{3}\ln x - \frac{x^3}{9} + C$
Para saber la correcta eleccion de "u" aplicar
INVERSA
LOGARITMICA
ALGEBRAICA
TRIGONOMETRICA
EXPONENCIAL


u dv
$\int x \cos 2x\, dx$
$u = x \quad dv = \cos 2x$
$du = 1 \quad v = \frac{1}{2}\operatorname{sen} 2x$
$x \operatorname{sen} 2x - \frac{1}{2}\int \operatorname{sen} 2x \cdot 1\, dx$
$-\frac{1}{2} - \frac{1}{2}\cos 2x$
$x \operatorname{sen} 2x + \frac{1}{4}\cos 2x + C$
u dv
$\int x \sec^2 3x\, dx$
$u = \sec^2 3x \quad dv = x$
$du = \quad v = \frac{x^2}{2}$
$\sec^2(3x)\ \operatorname{Tan}(3x)$
$u = x \quad dV = \sec^2 3x$
$dV = 1 \quad V = \frac{1}{3}\operatorname{TAN} 3x$
$\frac{x}{3}\operatorname{TAN} 3x - \frac{1}{3}\int \operatorname{tan} 3x\, dx$
$+\frac{1}{3}\frac{1}{3}\ln|\sec 3x| + C$
$\frac{x}{3}\operatorname{tan} 3x - \frac{1}{9}\ln|\sec 3x| + C$


$\int 2x \cos 2x \, dx$
$u = 2x \quad dv = \cos 2x$
$du = 2 \quad v = \frac{1}{2} \operatorname{sen} 2x$
$\frac{2}{2} - 1$
$\frac{2x}{1} \times \frac{1}{2} \operatorname{sen} 2x - \frac{1}{2} \int \operatorname{sen} 2x \, 2 \, dx$
$x \operatorname{sen} 2x -$
$-\frac{1}{2} \int \operatorname{sen} 4x \, dx$
$-\left(\frac{1}{2}\right)\left(-\frac{1}{4}\right) \cos 4x + C$
$x \operatorname{sen} 2x - \frac{1}{8} \cos 4x + C$


$\int x^2\sqrt{1-x}\,dx$
$u = x^2$ $dv = \sqrt{1-x}$
$du = 2x$ $dv = (1-x)^{1/2}$
$v = \frac{2}{3}(1-x)^{3/2}$
$v = \frac{2}{3}\sqrt{(1-x)^3}$
$\frac{2}{3}x^2\sqrt{(1-x)^3} - \frac{2}{3}\int \sqrt{(1-x)^3}\cdot 2x\,dx$
$u = 2x$ $dv = (1-x)^{3/2}$
$du = 2$ $v = \frac{2}{5}\sqrt{(1-x)^5}$
$-\frac{2}{5}\sqrt{(1-x)^5}\,2x - \frac{2}{5}\int \sqrt{(1-x)^5}\,(2)\,dx$
$\frac{2}{5}(1-x)^{5/2}$
$\frac{(1-x)^{7/2}}{7/2}$
$\frac{2}{7}\sqrt{(1-x)^7}$
$\frac{2}{3}x^2\sqrt{(1-x^3)} - \frac{2}{3}\cdot\frac{2}{5}\sqrt{(1-x^5)}\,2x - \frac{2}{5}\cdot\frac{3}{1}$
$\frac{4}{15}$
$\frac{4}{5}$