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1- $y - y^3 = (x - y^1)y^2$

Podemos hacer

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

$$\rightarrow \frac{y^1}{y^2} - y + y^1 = x \rightarrow \int \frac{y^1}{y^2} - y + y^1 dy = \int x\, dy$$

Entonces $\int \frac{y^1}{y^2} + y^1 - y\, dy = \int x\, dx = \frac{x^2}{2} + C$

2- $y^1 = \cos(x+y) + \cos(x-y)$

$$\rightarrow y^1 = \cos x + \cos y + \cos x - \cos y$$

$$\rightarrow y^1 = 2\cos x \rightarrow \int y^1 dy = \int 2\cos x\, dy$$

$$\boxed{Y = 2\operatorname{sen} x + C}$$

4- $y^2 dx - x\, dy = x^2 y\, dy$

3- No pude

X

$$y^2 dx - dy = x^2 y\, dy \rightarrow \frac{y^2 dy}{dy} - x = x^2 y$$

$$y\frac{dx}{dy} = -x$$