$$(1-x^2)y' + 4xy = ax$$

On multiplie par u $\quad u(1-x^2)y' + 4uxy = uax$

On pose $\quad v = (1-x^2)u \quad$ et $\quad v' = 4ux$

On a donc $\quad \left((1-x^2)u\right)' = 4ux$

$\Leftrightarrow \quad -2xu + u'(1-x^2) = 4ux$

$\Leftrightarrow \quad u'(1-x^2) = 6ux$

$\Leftrightarrow \quad \frac{u'}{u} = \frac{6x}{1-x^2} = -3 \times \frac{-2x}{1-x^2}$

$$\ln(u) = -3\ln(|1-x^2|)$$

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

On a donc $\quad \frac{-1}{(1-x^2)^2}y' + \frac{4x}{(1-x^2)^3}y = \frac{-ax}{(1-x^2)^3}$

$$\left[\frac{-1}{(1-x^2)^2}y\right]' = \frac{-ax}{(1-x^2)^3} = +\frac{a}{2} \times \frac{-2x}{(1-x^2)^3}$$

$$\left[\frac{-1}{(1-x^2)^2}y\right]' = \left[+\frac{a}{2} \times \frac{1}{(-2)} \times \frac{1}{(1-x^2)^2}\right]'$$

$$\frac{-1}{(1-x^2)}y + k = -\frac{a}{4} \times \frac{1}{(1-x^2)^2}$$

$$\Leftrightarrow \quad y = +\frac{a}{4} + \alpha(1-x^2)^2$$