



**8.  $xy''_{xx} + ny'_x + bx^{1-2n}y = 0.$**

1°. Solution for  $n = 1$ :

$$y = C_1|x|^{k_1} + C_2|x|^{k_2},$$

where  $C_1$  and  $C_2$  are arbitrary constants,  $k_1$  and  $k_2$  are roots of the quadratic equation  $k^2 + (n-1)k + b = 0$ .

2°. Solution for  $n \neq 1$ :

$$y = \begin{cases} C_1 \sin\left(\frac{\sqrt{b}}{n-1}x^{1-n}\right) + C_2 \cos\left(\frac{\sqrt{b}}{n-1}x^{1-n}\right) & \text{if } b > 0, \\ C_1 \exp\left(\frac{\sqrt{-b}}{n-1}x^{1-n}\right) + C_2 \exp\left(\frac{-\sqrt{-b}}{n-1}x^{1-n}\right) & \text{if } b < 0. \end{cases}$$

### References

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