



2. $y'''_{xxx} = ay^{-5/2} + by^{-7/2}$.

Solution in parametric form ($b \neq 0$):

$$x = \int \frac{dt}{[\varphi(t)]^{3/2}} + C_3, \quad y = \frac{1}{\varphi(t)},$$

where

$$\varphi(t) = -\frac{a}{b} + C_1 e^{-kt} + C_2 e^{kt/2} \sin \frac{kt\sqrt{3}}{2}, \quad k = b^{1/3},$$

C_1 , C_2 , and C_3 are arbitrary constants.

Reference

Polyanin, A. D. and Zaitsev, V. F., *Handbook of Exact Solutions for Ordinary Differential Equations*, 2nd Edition, Chapman & Hall/CRC, Boca Raton, 2003.