

Separate the following differential equation and integrate to find the general solution (for this problem, do not attempt any "simplifications" of your unknown parameter "C"):

$$y' + y^{-8} \sin(-9x) = 0$$

General Solution (implicitly): $\frac{y^9}{9} = -\left(\frac{\cos(-9x)}{9}\right) + c$

First Order Equations - Separable: Problem 2

$$y' + y^{-8} \sin(-9x) = 0$$

$$y' = -y^{-8} \sin(-9x)$$

$$\frac{dy}{dx} = \frac{-1}{y^8} \sin(-9x)$$

$$y^8 \frac{dy}{dx} = -1 \cdot \sin(-9x)$$

$$\int y^8 \frac{dy}{dx} dx = \int -\sin(-9x) dx$$

$$\int y^8 dy = -\int \sin(-9x) dx$$

$$\frac{y^9}{9} = -\left(\frac{-\cos(-9x)}{-9}\right) + c \rightarrow \frac{y^9}{9} = \frac{-\cos(-9x)}{9} + c$$

↓
general solution
(implicitly)