

QUESTION

Find the general solution of the differential equation $\frac{d^2x}{dt^2} - \frac{dx}{dt} - 6x = 0$.

ANSWER

$\frac{d^2x}{dt^2} - \frac{dx}{dt} - 6x = 0$ has auxiliary equation $m^2 - m - 6 = (m - 3)(m + 2) = 0$,
therefore $m = 3, -2$. The general solution is $x = Ae^{3t} + Be^{-2t}$