

QUESTION

Find the general solution of the differential equation $\frac{d^2x}{dt^2} + 5\frac{dx}{dt} + 6x = 0$.

ANSWER

$\frac{d^2x}{dt^2} + 5\frac{dx}{dt} + 6x = 0$. The auxiliary equation is $m^2 + 5m + 6 = 0 = (m + 3)(m + 2)$, which has solutions $m = -2, -3$. Therefore $x = Ae^{-2t} + Be^{-3t}$.