Q: The state equation of a second order system is
$\dot{\boldsymbol{x}}(t) = A\boldsymbol{x}(t), \quad \boldsymbol{x}(0)$ is the initial condition.
Suppose λ_1 and λ_2 are two distinct eigenvalues of A, and ν_1 and ν_2 are the corresponding eigenvectors. For constants α_1 and α_2, the solution, $\boldsymbol{x}(t)$, of the state equation is

(A) $\sum_{i=1}^{2} \alpha_i e^{\lambda_i t} \nu_{\mathbf{i}}$
(B) $\sum_{i=1}^{2} \alpha_i e^{2\lambda_i t} \nu_{\mathbf{i}}$
(C) $\sum_{i=1}^{2} \alpha_i e^{3\lambda_i t} \nu_{\mathbf{i}}$
(D) $\sum_{i=1}^{2} \alpha_i e^{4\lambda_i t} \nu_{\mathbf{i}}$