Бекешева Анастасія ФІ-12

$$x = A_0 e^{-\beta t} \cos(\omega t), \qquad v = \int A_0 e^{-\beta t} \cos(\omega t) dt =$$

$$= \frac{1}{\omega^2 + \beta^2} A_0 e^{-\beta t} (\omega \sin(\omega t) - \beta \cos(\omega t)),$$

$$0 = \frac{1}{\omega^2 + \beta^2} A_0 e^{-\beta t} (\omega \sin(\omega t) - \beta \cos(\omega t)) = \omega \sin(\omega t) - \beta \cos(\omega t),$$

$$\sin \omega t = \frac{\beta}{\omega} \cos \omega t, \qquad \tan \omega t = \frac{\beta}{\omega}, \qquad t = \frac{1}{\omega} \arctan \frac{\beta}{\omega},$$

$$v = 0 : S = x(t) = A_0 e^{-\beta t} \cos \left(\frac{1}{\omega} \arctan \frac{\beta}{\omega} \right)$$