

Post 4.2

Analysis of the ODE: Given

$$ay'' + by' + cy = \cos(\omega t)$$

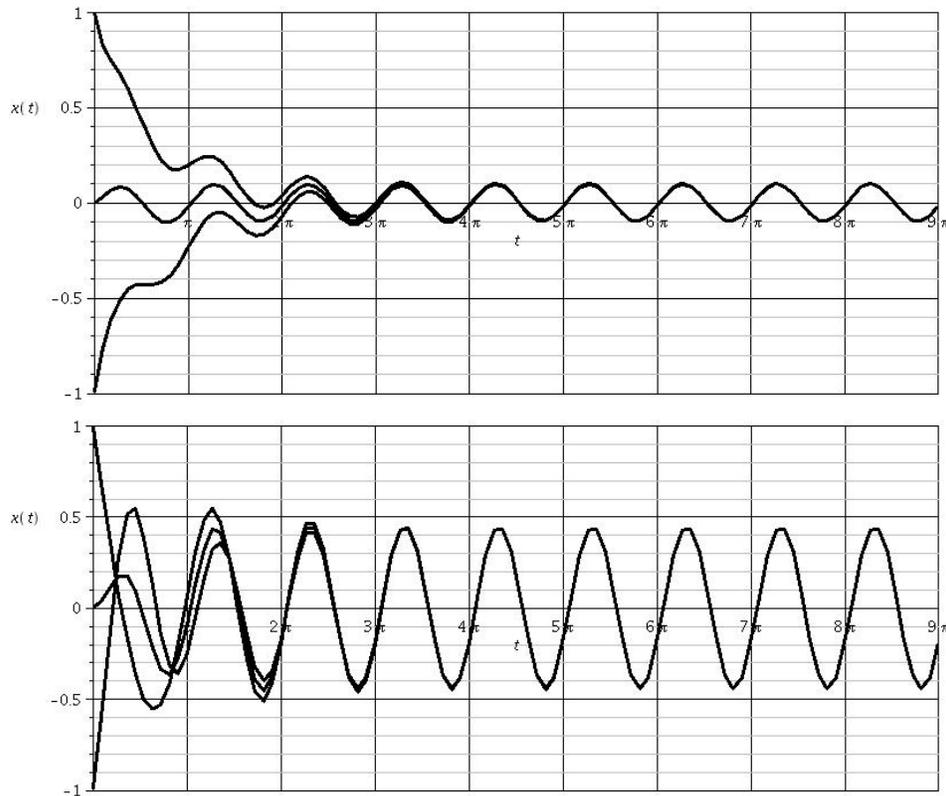
We know that the response will be a homogeneous part, y_h , and a particular part, y_p . Since in our physical model, $b \neq 0$, then the particular part will be of the form

$$A \cos(\omega t) + B \sin(\omega t) = R \cos(\omega t - \delta)$$

where $R = \sqrt{A^2 + B^2}$ and period is $2\pi/\omega$.

Given two graphs, try to determine which graph goes with which equation:

$$y'' + 5y' + 2y = \cos(2t) \quad y'' + y' + 3y = \cos(2t)$$



HINT: Consider the period and amplitude of the particular part of the solution first, then consider the solution to the homogeneous part, if necessary.