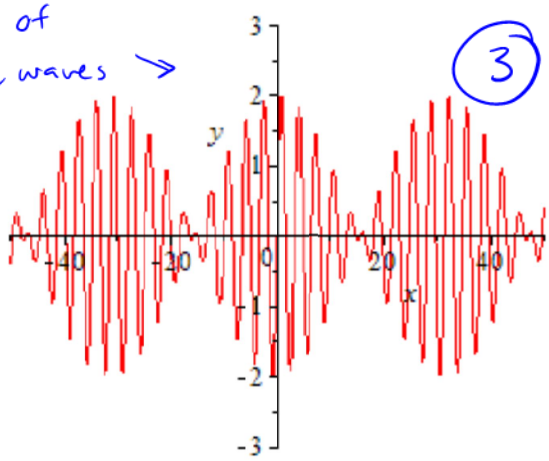
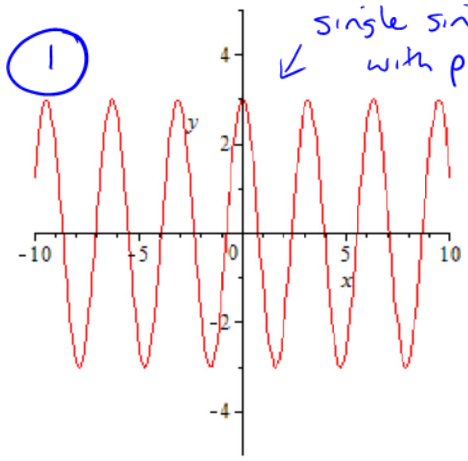
Math 252: Graphs of Solutions to 2nd Order Linear DEs
In-class Exercise

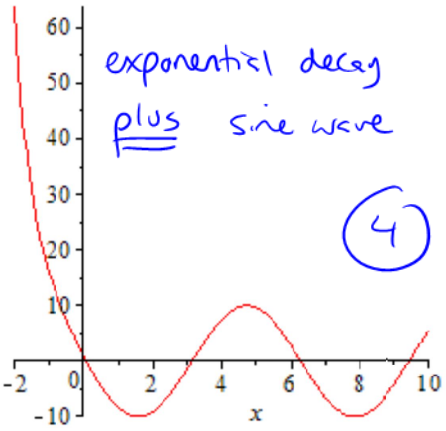
Match the solution graphs below with one of the following differential equations. Also, in the space below the graphs, explain your answer to (3).

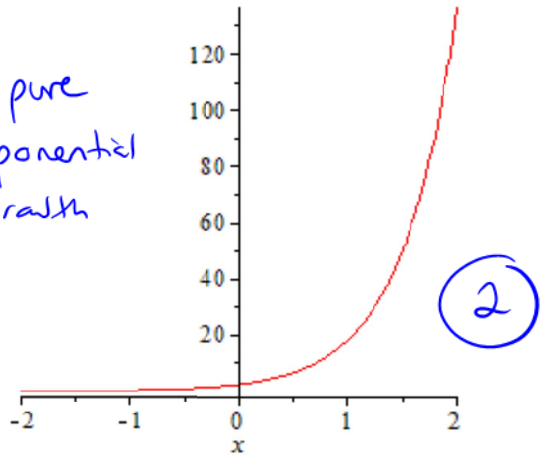
1. $y'' + 4y = 0$ $m^2+4=0$, $m=\pm 2i$, $y = C_1 \cos 2x + C_2 \sin 2x$
2. $y'' - 4y = 0$ $m^2-4=0$, $m=\pm 2$, $y = C_1 e^{2x} + C_2 e^{-2x}$
3. $y'' + 4y = \sin x$ y_c = same as (1), $y_p = A\sin x + B\cos x$
4. $y'' - 4y = \sin x$ y_c = same as (2), y_p = " "

the sum of two sine waves with different periods →









(3) sum of two sine waves of different periods — "beat" frequency