Forced Oscillations and Resonance- HW Problems

Note: you can use the results from the HW problems in “Vibrating Springs”.

Find the position $x(t)$ of the mass for the forced oscillating system given by $mx'' + cx' + kx = F_0 \cos(wt)$ for the conditions.

1. $m = 2,\ c = 0,\ k = 6, w = 2,\ F_0 = 130,\ x(0) = 3,\ x'(0) = 2.$
2. $m = 2,\ c = 8,\ k = 6, w = 2,\ F_0 = 130,\ x(0) = 3,\ x'(0) = 2.$
3. $m = 1,\ c = 0,\ k = 9, w = 6,\ F_0 = 9,\ x(0) = -2,\ x'(0) = -6.$
4. $m = 1,\ c = 6,\ k = 9, w = 6,\ F_0 = 9,\ x(0) = -2,\ x'(0) = -6.$