1. b)



c) 

The solutions indeed match up once steady state is reached. At t=6.21s and beyond, the maximum difference between the solutions is 2% of A. This is 7.46 damping time constants.

d) 

This is an exponentially decaying harmonic function of t. Some decaying exponential term is multiplied to a cosine in the form A\*exp(-bt)[cos((w1)t + @)]