MATH 246 GROUP WORK 8
23 OCT 2020, INSTRUCTOR: RUIWEN SHU

Each group only needs to submit ONE file containing your solutions!

Problem 1. Consider a damped harmonic oscillator

$$h'' + 2\eta h' + 25h = 0, \quad h(0) = 1, \quad h'(0) = 0$$

(1) For the situations $\eta_1 = 4$, $\eta_2 = 5$, $\eta_3 = 6$, solve the ODE. Which classes (under damped, over damped, critically damped) do they belong to?

(2) For the three solutions in (1), which one decays fastest to zero as $t \to \infty$?

Problem 2. Consider a damped harmonic oscillator

$$h'' + 3h' + 2h = 0, \quad h(0) = 1, \quad h'(0) = x$$

where x is a real number. For what values of x, the solution $h(t)$ is a monotone function for all $t \geq 0$?