

## Homework assignment #3 for CCB 425/525, Spring 2019

1. Show that the following is a formal solution to the Langevin equation:

$$\mathbf{v}(t) = \mathbf{v}_0 e^{-\zeta t} + e^{-\zeta t} \int_0^t e^{\zeta x} \mathbf{A}(x) dx$$

2. Assuming that the ensemble average of the stochastic force is zero (i.e.  $\langle A(t) \rangle = 0$ ), derive an equation for the ensemble average  $\langle \mathbf{v} \rangle (t)$ .
3. Problem 24.1 in Dill & Bromberg
4. Problem 24.2 in Dill & Bromberg

*This assignment should be turned in at class on Monday, Feb. 25. Please show your work for all problems!*