Quiz 6, Math 246, Professor David Levermore
Tuesday, 16 October 2018

Your Name:

Discussion Instructor (circle one): Sid Sharma Anqi Ye
Discussion Time (circle one): 8:00 9:00 10:00

No books, notes, calculators, or any electronic devices.
Show your reasoning for full credit. Good luck!

(1) [5] Compute the Green function for the differential operator $\mathrm{L} = \mathrm{D}^2 + 4\mathrm{D} + 29$.

(2) [3] Find the amplitude and phase of the simple harmonic motion

$$h(t) = 5\cos(3t) - 12\sin(3t)\,.$$

(3) [2] The displacement $h(t)$ of a spring-mass system is governed by

$$\ddot{h} + 2\eta\dot{h} + 25h = f(t)\,,$$

where $\eta \geq 0$ and $f(t)$ is a forcing. For what values of η is the system under damped?