

ECE 343 - Homework #10

Natural and Impulse Response - Summer 2018

Natural Response

- 1) Find the solution to the following differential equation with an initial condition

$$\frac{dy}{dt} + 5y = 0$$

$$y(0) = 10$$

- 2) Find the solution to the following differential equation with an initial condition

$$\frac{d^2y}{dt^2} + 6\frac{dy}{dt} + 8y = 0$$

$$y(0) = 10$$

$$y'(0) = 0$$

Impulse Response

- 3) Find the solution to the following differential equation

$$\frac{dy}{dt} + 5y = 10x$$

$$x(t) = \delta(t)$$

- 4) Find the solution to the following differential equation

$$\frac{d^2y}{dt^2} + 6\frac{dy}{dt} + 8y = 10x$$

$$x(t) = \delta(t)$$