

Quiz 4 Form B  
Oct 16, 2017

1. A mass weighing 9 lbs stretches a spring 5 in. The mass is acted on by an external force of  $7\sin(3t)$  lbs. The mass is pulled down 2 feet and then set in motion with an upward velocity of 8ft/s. Assume that there is no damping. Note  $g = 32ft/s^2$ . State the initial value problem that describes the motion of this mass.

IVP: \_\_\_\_\_

2.) Given that the solution to  $y'' + y = 0$  is  $y = c_1\cos(t) + c_2\sin(t)$ , what would be a good guess for a non-homogeneous solution to  $y'' + y = \sin(3t)$ ? Note you do not need to solve this differential equation. You also don't need to determine the undetermined coefficients.

Answer: \_\_\_\_\_

3.) Suppose that  $y_1(t) = t$  and  $y_2(t) = t^2$  are solutions to the differential equation,  $y'' + p(t)y' + q(t)y = 0$ . Find the general solution to  $y'' + p(t)y' + q(t)y = \frac{1}{t}$

General solution: \_\_\_\_\_