

Quiz 4 Form A

Oct 16, 2017

1. A mass weighing 5 lbs stretches a spring 8 in. The mass is acted on by an external force of $9\sin(2t)$ lbs. The mass is pulled down 1 foot and then set in motion with an upward velocity of 3ft/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 $y'' + y = \cos(2t)$? 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: _____