**Sample 6a**

**In a damped spring-mass oscillator driven by a horizontal time-dependent**

**force, the mass is initially stationary with the spring stretched a distance of .5 m from its equilibrium position. The differential equation for the oscillator is**

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**where the mass m = 3.6 kg, the damping coefficient c = 2.8 N·s/m, the spring constant k = 19 N/m, x is the displacement of the mass from its equilibrium position, and t is the time.**

**Write a MATLAB program as follows:**

**1) t will go from 0 to 20 sec in steps of .001 sec.**

**2) Calculate the displacement x and velocity v of the mass for each value of t.**

**Use 1e-7 as the accuracy factors.**

**3) Plot x in blue and v in red versus t and the t axis in black. The graph**

**should look like the one on the attached sheet.**