Differential Equation: Homework #7

Due on October 26th, 2015 at 3:10pm

Professor Heather Lee Section 061

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Problem 1

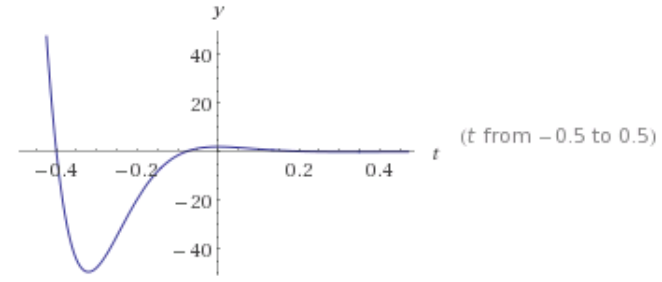
$$mu'' + \gamma u' + ku = 0$$

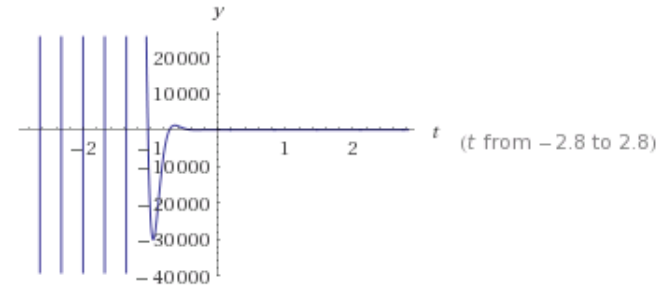
where $m = 20g$ $\gamma = 400$ $k = \frac{mg}{L} = 3920$ Plug it in, we get

$$u'' + 20u' + 196u = 0$$

Solve it with the initial value, we get

$$u(t) = e^{-10t}(2cos4\sqrt{6}t + \frac{5}{\sqrt{6}}sin4\sqrt{6}t)$$





The quasi-frequency is $\mu = 4\sqrt{6}$

The quasi-period is $T_d = \frac{\pi}{2\sqrt{6}}$

The ratio is $T_d/T = \frac{7}{2\sqrt{6}}$

Problem 2