NAME: _____

Test Prep 3

Here are problems where you can practice undetermined coefficients. If you finish this page, try the problems on the back (for an extra point). You have 15 minutes.

1. Find the solution to $y'' + 9y = 7\cos(4t)$ with $y(0) = 0$, $y'(0) = 0$ (solve and find all constants).

2. What choice would you make for the form of a particular solution to $y'' + 9y = 7\cos(3t)$? (For this part, do NOT solve, just write down the form of a particular solution with A, B, C, *etc* for the constants and do NOT solve for A, B...)

$$Y_p(t) = \qquad\qquad\qquad\qquad .$$

PART OF AN OLD EXAM PROBLEM: A certain car has mass 800 kg and the combined effect of the springs in the suspensions system gives a spring constant of 16000 N/m. Your job is to design a damping mechanism which eliminates oscillations when the automobile hits a bump. What is the minimum value that the damping constant, γ, needs to be in order to eliminate oscillations? (You can leave in exact form or give a decimal)

$$\gamma = \underline{\hspace{4cm}} \text{ N/(m/s)}$$

Questions for your instructor about the current material?