# Math 2A Quiz 8

**Fri Mar 11, 2016 DUE Wed Mar 16, 2016 @ 8:30am**

NAME YOU ASKED TO BE CALLED IN CLASS:

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**SCORE: _____ / 30 POINTS**

1. **Show proper calculus level work to justify your answers**
2. **Simplify all final answers**
3. **Do NOT use hyperbolic functions in your work**

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Find the Laplace transform of $f(t) = t^2 e^{3t} \sin t$. Write your final answer as a single fraction.     **SCORE: _____ / 4 PTS**

Find the inverse Laplace transform of $\dfrac{25e^{-2s} - 25se^{-3s}}{(s-1)^2(s+4)}$.     **SCORE: _____ / 8 PTS**

Use Laplace transforms to solve the initial value problem $y'' + 4y' + 8y = g(t)$, $\quad y(0) = 5$, $\quad y'(0) = -6$ $\qquad$ **SCORE: _____ / 18 PTS**

where $g(t)$ is the function whose graph is shown on the right.

**NOTE: Each "piece" of $g(t)$ is linear.**