QUIZ 7 - MATH 310   Thursday, March 20

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Read each problem **very carefully** before starting to solve it and do only what is asked.
Each problem is worth around 5 points. It is necessary to show **all** your work. Correct
answers without explanations are worth 0 points. GOOD LUCK!!

1. [8 points] Use the method of Laplace transforms to find the solution of

$$y'' - 4y = \sin(2t), \quad y(0) = 1, \quad y'(0) = 0.$$

2. [4 points]

(a) Find the Laplace transform of

$$f(t) = \begin{cases} \sin(2t), & \text{if } 0 \le t < \pi, \\ \sin(2t) - \cos(3t), & \text{if } t \ge \pi. \end{cases}$$

(b) Find the inverse Laplace transform of $F(s) = e^{-7s} \dfrac{s+5}{s^2 + 10s + 34}$.