

YOUR NAME: _____

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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. [6 points] Consider the function $d_1(t - 7)$.

(a) Define it formally on the left and sketch its graph (neatly) on the right below.

(b) Compute from scratch the Laplace transform $\mathcal{L}\{d_1(t - 7)\}$.

2. [6 points] Solve using Laplace Transforms the initial value problem

$$y'' + 9y = 27 \delta(t - 7), \quad y(0) = 3, \quad y'(0) = 1.$$

