

Math 225 – Quiz #11: Translation Theorems

Clearly and neatly show all work for each problem. Solutions with no work will receive no credit.

Solve the following initial value problems using the Laplace transform.

$$(1) \quad y' - y = 1 + te^t, \quad y(0) = 0$$

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

$$(3) \quad y'' + 4y' + 3y = f(t), \quad y(0) = 0, \quad y'(0) = 0, \quad f(t) = \begin{cases} 1, & 0 \leq t < 3 \\ -1, & 3 \leq t < 6 \\ 0, & t \geq 6 \end{cases}$$