18.03SC Practice Problems 8

Exponential and Sinusoidal Input

1. Find a solution of $\dot{x} + 2x = e^t$ of the form we^t. Do the same for $\dot{z} + 2z = e^{2it}$. (First determine the appropriate corresponding form of the solution.) In both cases, find the general solution.

2. Find a solution of $\dot{x} + 2x = \cos(2t)$ using *complex replacement*. Your work should also give you a solution for $\dot{x} + 2x = \sin(2t)$.

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18.03SC Differential Equations
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