

Is it Particular?

Quiz: The first order linear DE $\dot{x} + kx = t$ has general solution

$$x(t) = t/k - 1/k^2 + ce^{-kt}.$$

Which of the following could be chosen as a particular solution to the DE?

- a. $t/k - 1/k^2$
- b. $t/k - 1/k^2 + 3e^{-kt}$
- c. $t/k - 1/k^2 + ce^{-kt}$
- d. e^{-kt}

Choices:

- 1. (a) only
- 2. (b) only
- 3. (d) only
- 4. (a) and (b) only
- 5. (a), (b) and (c) only
- 6. All of them.

Answer:

(4): (a) and (b).

(a) and (b) are both specific solutions so they can be particular solutions.

(c) is the general solution, so it is not a particular solution. (We will accept the argument that c could be a specific constant and therefore this could be a particular solution.)

(d) is a homogeneous solution not an inhomogeneous one.

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