Is it Particular?

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

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

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.

Pick what you think is the correct choice and then look at the answer.