

PROBLEM:

For each of the following signals, pick one of the representations below that defines *exactly* the same signal. Write your answer $x_1(t)$, $x_2(t)$, $x_3(t)$, $x_4(t)$, or $x_5(t)$, in the box next to each signal. In addition, write the complex amplitude (X_k) of the sinusoid for each case in the space provided.

ANS = $\cos(77\pi t + 5\pi/4)$

$X_k =$

ANS = $\cos(77\pi t + 7\pi/4)$

$X_k =$

ANS = $\frac{1}{2}e^{j7\pi/4}e^{j77\pi t} + \frac{1}{2}e^{-j7\pi/4}e^{-j77\pi t}$

$X_k =$

ANS = $\cos(77\pi t + 9\pi/4)$

$X_k =$

ANS = $\Re\left\{\frac{1}{2}(-\sqrt{2} + j\sqrt{2})e^{j77\pi t}\right\}$

$X_k =$

POSSIBLE ANSWERS: Some of these answers can be used more than once.

If one answer is used twice, another one won't be used at all.

1. $x_1(t) = \frac{1}{2}e^{j\pi/4}e^{j77\pi t} + \frac{1}{2}e^{-j\pi/4}e^{-j77\pi t}$

2. $x_2(t) = \Re\left\{e^{-j5\pi/4}e^{j77\pi t}\right\}$

3. $x_3(t) = \cos(77\pi t - 3\pi/4)$

4. $x_4(t) = \Re\left\{\frac{1}{2}e^{-j5\pi/4}e^{j77\pi t}\right\}$

5. $x_5(t) = \Re\left\{\frac{1}{2}(\sqrt{2} - j\sqrt{2})e^{j77\pi t}\right\}$