PROBLEM:

For each of the following sinusoidal 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 (phasor) (X_k) of the sinusoid for each casein the space provided.

ANS = $\cos(50\pi t + 4\pi/3)$

$X_k =$

ANS = $\cos(50\pi t + 5\pi/3)$

$X_k =$

ANS = $\frac{1}{2}e^{j5\pi/3}e^{j50\pi t} + \frac{1}{2}e^{-j5\pi/3}e^{-j50\pi t}$

$X_k =$

ANS = $\cos(50\pi t + 7\pi/3)$

$X_k =$

ANS = $\Re e\left\{\frac{1}{2}(-1 + j\sqrt{3})e^{j50\pi t}\right\}$

$X_k =$

POSSIBLE ANSWERS: Some of these answers can be used <u>more than once.</u>
If one answer is used twice, another one won't be used at all.

1. $x_1(t) = \frac{1}{2}e^{j\pi/3}e^{j50\pi t} + \frac{1}{2}e^{-j\pi/3}e^{-j50\pi t}$

2. $x_2(t) = \Re e\left\{e^{-j4\pi/3}e^{j50\pi t}\right\}$

3. $x_3(t) = \cos(50\pi t - 2\pi/3)$

4. $x_4(t) = \Re e\left\{\frac{1}{2}e^{-j4\pi/3}e^{j50\pi t}\right\}$

5. $x_5(t) = \Re e\left\{\frac{1}{2}(1 - j\sqrt{3})e^{j50\pi t}\right\}$