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 = $3\cos(1000\pi t + \pi/3)$

$X_k =$

ANS = $3\cos(1000\pi t + 2\pi/3)$

$X_k =$

ANS = $\frac{3}{2}e^{j2\pi/3}e^{j1000\pi t} + \frac{3}{2}e^{-j2\pi/3}e^{-j1000\pi t}$

$X_k =$

ANS = $3\cos(1000\pi t - 8\pi/3)$

$X_k =$

ANS = $\Re e\left\{\frac{3}{2}(1 - j\sqrt{3})e^{j1000\pi t}\right\}$

$X_k =$

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. $x_1(t) = 3\cos(1000\pi t + 8\pi/3)$

2. $x_2(t) = \Re e\left\{\frac{3}{2}e^{-j\pi/3}e^{j1000\pi t}\right\}$

3. $x_3(t) = 3\cos(1000\pi t - \pi/3)$

4. $x_4(t) = \Re e\left\{\frac{3}{2}(1 + j\sqrt{3})e^{j1000\pi t}\right\}$

5. $x_5(t) = \Re e\left\{3e^{-j2\pi/3}e^{j1000\pi t}\right\}$