**PROBLEM:**

Suppose that a discrete-time signal $x[n]$ is given by the formula

$$x[n] = 25\cos(0.2\pi n + \pi/4)$$

and that it was obtained by sampling a continuous-time signal at a sampling rate of $f_s = 1/T_s = 500$ samples/second.

(a) Determine two *different* continuous-time signals $x_1(t)$ and $x_2(t)$ whose samples are equal to $x[n]$; i.e., find $x_1(t)$ and $x_2(t)$ such that $x[n] = x_1(nT_s) = x_2(nT_s)$ if $T_s = .002$. Both of these signals should have a frequency less than 500 Hz. Give a formula for each signal.

(b) If $x[n]$ is given by the equation above, what signal will be reconstructed by an ideal D-to-C converter operating at sampling rate 500 samples/second? That is, what is the output $x_r(t)$ in the following figure if $x[n]$ is as given above?