Example 3-4: Decreasing f_Δ

If f_Δ is decreased to 9 Hz, we see in Fig. 3-4(a,b) that the envelope of the 200 Hz tone changes much more slowly. The time interval between nulls of the envelope is $\frac{1}{2}(1/f_\Delta)$, so the more closely spaced the frequencies of the sinusoids

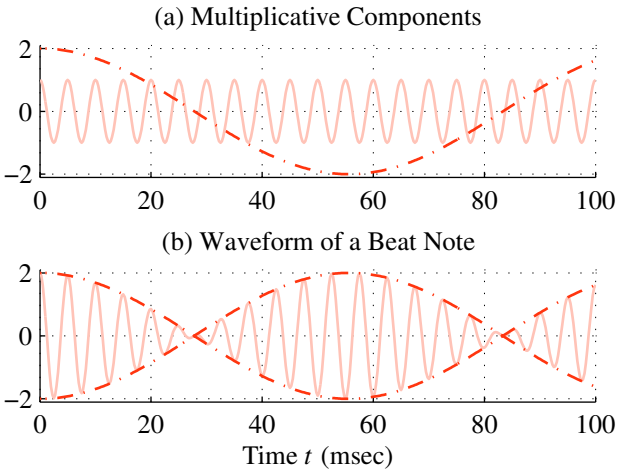

Figure 3-4: Beat note with $f_c = 200$ Hz and $f_\Delta = 9$ Hz. Nulls are now $\frac{1}{2}(1/f_\Delta) = 55.6$ msec. apart.

in (3.10), the slower the envelope variation. These figures are simplified somewhat by using cosines for both terms in (3.10), but other phase relationships would give similar patterns. Finally, remember that the spectrum for $x(t)$ in Fig. 3-3 contains frequency components at ± 220 Hz and ± 180 Hz, while the spectrum for Fig. 3-4 has frequencies ± 209 Hz and ± 191 Hz.

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