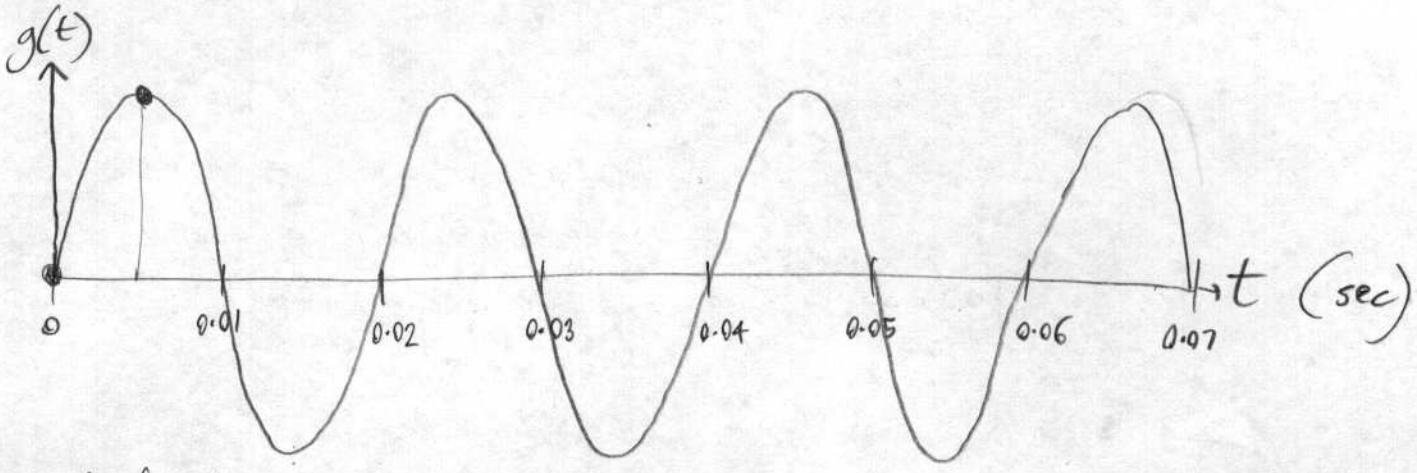
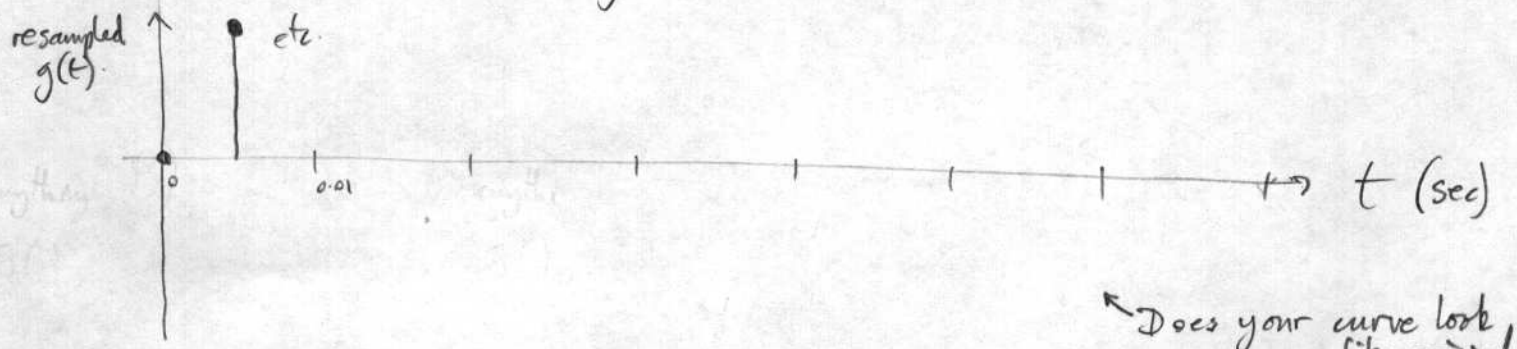
MATH 5 WORKSHEET : Digital sampling

5/29/07
Barnett

Here's a sinusoidal signal of frequency 50 Hz

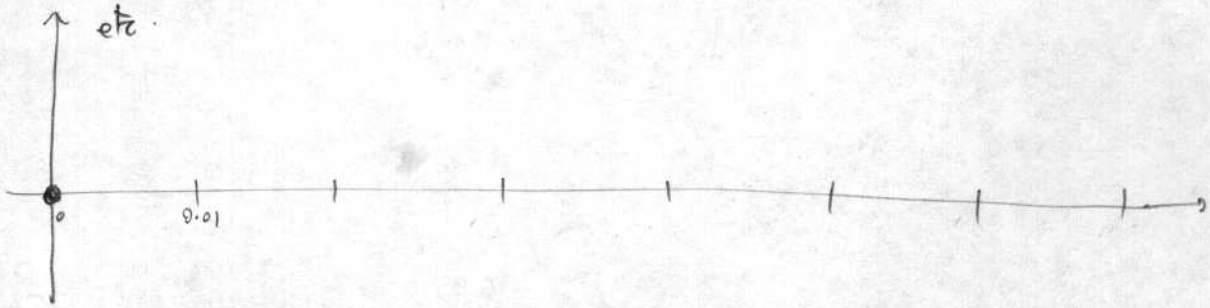


Draw samples (spikes) every 0.005 s ($f_s = 200$ Hz), then connect them with a smooth curve



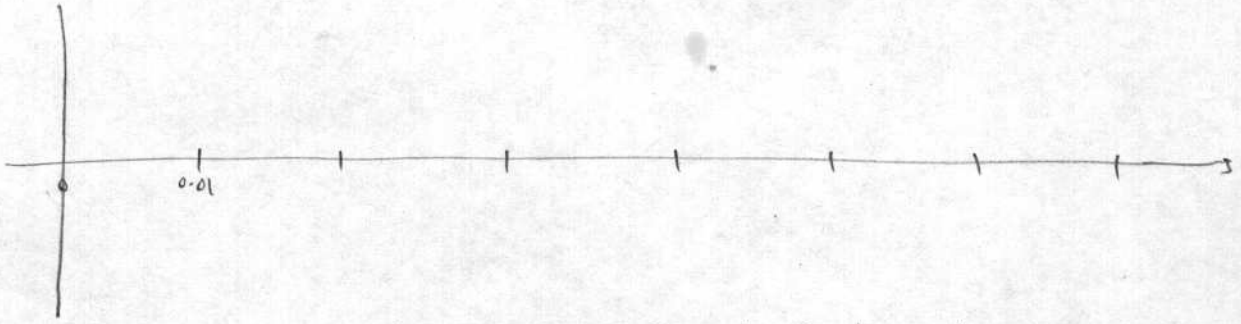
↖ Does your curve look like original?

Do the same but every 0.01 s (f_s = ?)



Do the same but every 0.15 s: (f_s = ?)

↖ Does your curve look like original?



How does your curve relate to original? At least what f_s is needed to recover signal?

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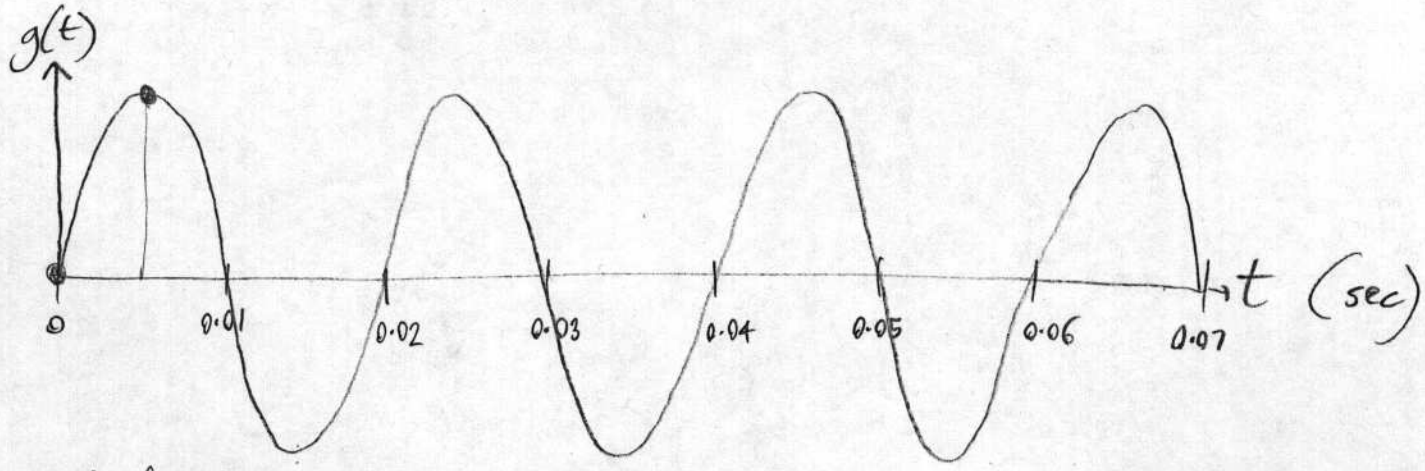
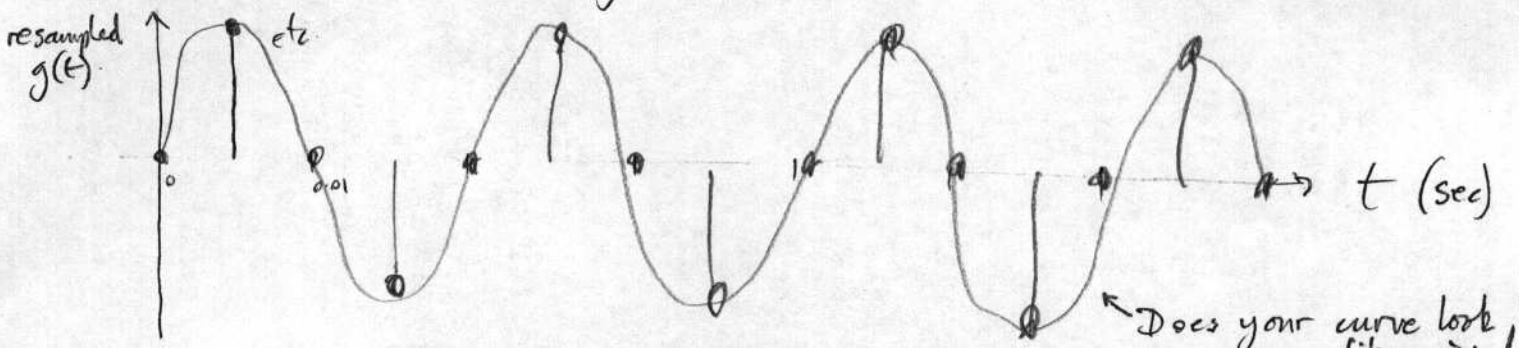
Here's a sinusoidal signal of frequency 50 Hz

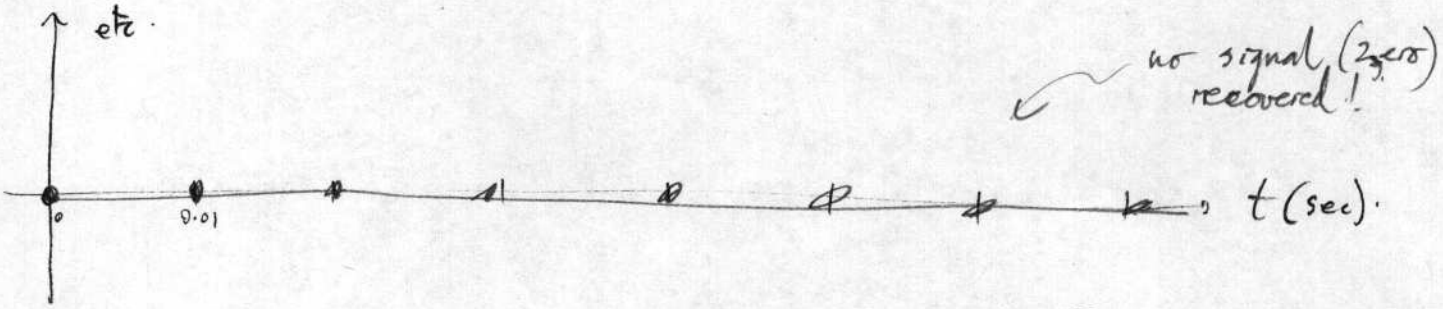


Draw samples (spikes) every 0.005 s ($f_s = 200$ Hz), then connect them with a smooth curve



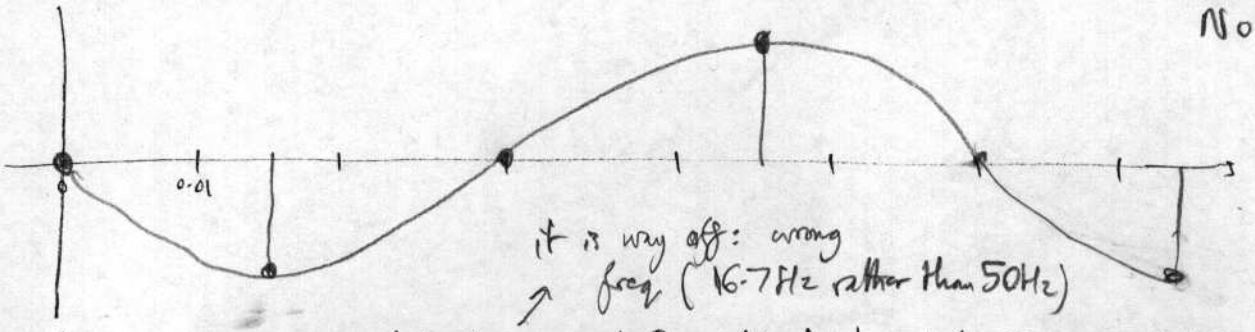
↖ Does your curve look like original?

Do the same but every 0.01 s ($f_s = ?$ 100Hz)



Do the same but every 0.15 s: ($f_s = ?$ 6.7Hz)

↖ Does your curve look like original? No!



it is way off: wrong freq (16.7 Hz rather than 50Hz)

at least > 100Hz ↗ it turns out.

How does your curve relate to original? At least what f_s is needed to recover signal?