2a) Given f= 8kHz for for KHZ 2[n] = Acos(an. - n) = Acos(II) 20[n] - A cos (ati. 2.n) - A cos (IIn) for for 2KHZ 2[n] - Acos(211.3.n) - Acos(311n) for for 3KHZ for fo: 3.5 KH2 2[n] , A cos (217. 3.5.n), A cos (7[n) 2[n] - A cos (211-4 n) - Acos (17n) for fo : 4KHZ 2[n]-Acos(211-5n)-Acos(511n) for fo - SKHZ 2[n] - A cos (211 . En) = A cos (311n) for to = 6KHZ 2[n]: A cos(217=7n) - A cos (7tin) for fo= 7KHZ Now consider fo - 7KHZ x[n]= Acos (711n) - Acos (811-11)n) = A cos (alin-(IIn)) As nez Cos (21Tn-0)= cos 0. 2 mi = A cos (In) = 2[n] for f > 1kH 2 similarly graph for fo=6KHZ ~ fo=2KHZ fo=5KH2 ≈ fo=3KH2 So the similarity of plots is due to cos difference identity [i.e cos(aTT-0) = cos0] The frequency of analog sinusoids = fo But the frequency of sampled sinusoids = fo fo So the sampled sinusoids do not reflect the true trequency.

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