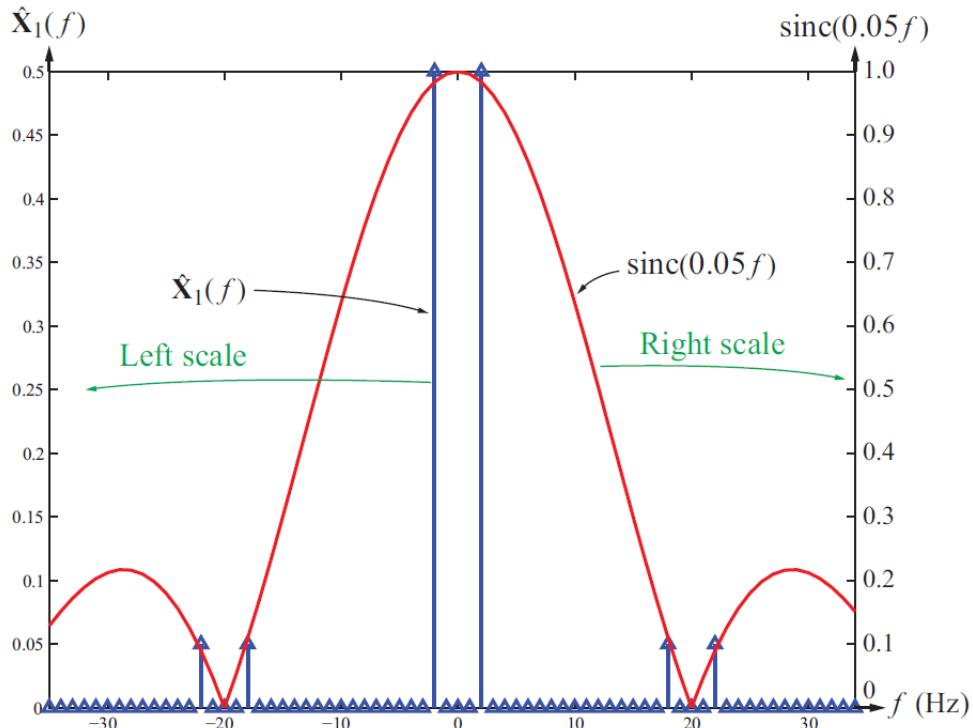


Concept Question 2-7: Why does nearest-neighbor interpolation work as well as it does?

The frequency response of NN interpolation is a sinc function (Eq. (2.57)) whose zeros coincide with the centers of the copies of the spectrum created by sampling. This is illustrated nicely in Fig. 2-10(a).



(a) Spectrum $\hat{X}_1(f)$ of 2 Hz signal $x_1(t)$. The sinc function is shown in red.