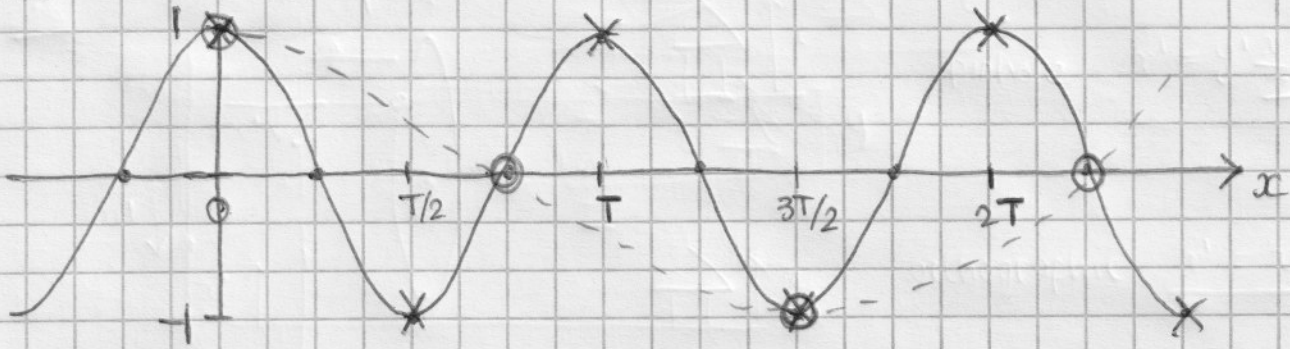


6.1



$$f(x) = \cos \frac{2\pi}{T} x = \cos 2\pi f x \quad f = \frac{1}{T}$$

Nyquist sample frequency $f_s \geq 2f$ change to \rightarrow

$$T_s \leq \frac{T}{2} \quad \leftarrow$$

Must sample at least 2x per period

e.g. x at peak/trough, samples 1, -1, 1, -1, 1, -1, ...

what if we sample $T_s = 3/4 T$ \rightarrow Aliasing.

6.2

Max freq we can represent on a pixel grid

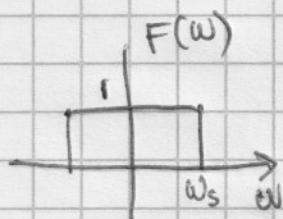
$$0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \quad f = 1 \text{ cycle} / 2 \text{ pixels}$$

\therefore to resample the underlying continuous function

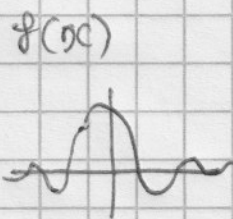
we must sample at $f_s > 1 \text{ cycle} / \text{pixel}$

i.e. sample at least once per pixel

pure low pass



\leftrightarrow
FT



\approx $\text{sinc}(x)$

