Review assignment 3

Fourier transforms.

(1) Suppose $x(t)$ is defined as

$$x(t) = \begin{cases} \cos(2\pi f_0 t), & \text{for } 0 \le t \le m/f_0,\ m \in \mathbb{Z}_+ \\ 0, & \text{for other values of } t. \end{cases}$$

Find out $X(f)$ - Which is the Fourier transform of $x(t)$.

(2) Study the Fourier transform properties listed below from the textbook. Derive each property

a) Linearity

b) Time delay

c) Conjugate symmetry of the $X(f)$ of a real valued signal $x(t)$

d) Parseval's identity

e) Convolution in time corresponds to multiplication in frequency.

(3) Problem 2.4.
(4) Problem 2.5.
(5) Problem 2.6.

} from the textbook by Upamanyu Madhow