

Digital Signal Processing

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1 QUIZ PROBLEMS

1.1 Show that

$$\sum_{n=0}^5 e^{\frac{j2\pi n}{6}} = 0 \quad (1.1)$$

1.2 Show that

$$\sum_{n=0}^2 e^{\frac{j2\pi n}{3}} = 0 \quad (1.2)$$

1.3 Show that

$$\sum_{n=0}^{N-1} e^{\frac{j2\pi n}{N}} = 0 \quad (1.3)$$

1.4 If $X(k) = \sum_{n=0}^{N-1} x(n) e^{-\frac{j2\pi nk}{N}}$, Show that,

$$x(n) = \frac{1}{N} \sum_{k=0}^{N-1} X(k) e^{\frac{j2\pi nk}{N}} \quad (1.4)$$