정보통신 수학 및 실습
Homework

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Chapter 3 Homework

1. Simplify the following equations.

a) $\cos(100\pi t)\cos(500\pi t)$

b) $4sin(200\pi t)cos(300\pi t)$

2. Find the frequency of the following signals.

a) $\sin(t)$

b) $\cos(600\pi t)$

3. Evaluate the following functions.

a) $sin(\pi/4)$

b) $tan(\pi)$

4. Let the information signal $m(t) = 4\sin(200\pi t)$ and the carrier signal $c(t) = \cos(2 \times 10^6 \pi t)$. Simplify the transmission signal $x(t) = m(t)c(t)$ and find its frequencies. Plot the magnitude of each frequency in the frequency domain.

(a) $\log 3 + \log 10 = \log 30$

(b) $\log 20 - \log 2 = \log 10$

5. Find the power gain in dB

(a) Pi=1W, Po=100W

$10\log(100/1) = 20$

(b) Pi=1W, Po=1W

$10\log 1 = 0$