King Fahd University of Petroleum & Minerals

Electrical Engineering Department EE370: Communications Engineering I (102)

Quiz 1: Introduction and Review of Signals

Serial #

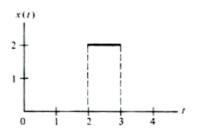
-1 points for not writing your serial #

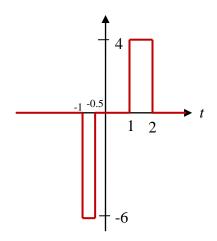
Name: Key Ver.1

Mention three reasons for Modulation?

- 1) For sending many signals (Frequency division Multiplexing)
- 2) To control the antenna size, for wireless applications
- 3) To control the propagation characteristics

Given the following signal x(t). Sketch 2x(t+1)-3x(1-2t)





Sketch the double sided spectra of the following signal

$$g(t) = 2 + 3\cos\left(2t + \frac{\pi}{4}\right) + \sin\left(4t - \frac{\pi}{4}\right)$$

$$g(t) = 2 + 3\cos\left(2t + \frac{\pi}{4}\right) + \cos\left(4t - \frac{\pi}{4} - \frac{\pi}{2}\right)$$

Convert sine to cosine and then proceed with the two sketches

You must indicate the x-axis $(n, f, \text{ or } \omega)$ and the important point.

It is ω the deltas will be at 0, 2, and 4 and it is n the deltas will be at 0, 1, and 2 (assumed $\omega_0=2$)

What is the root mean squared value (r.m.s) of the signal, g(t)

Power=4+9/2+1/2=9 = r.m.s=sqrt(9)=3