## King Fahd University of Petroleum & Minerals

**Electrical Engineering Department** 

EE370 Communication Engineering I (071) Quiz 1: Review of Signals and System

Serial # 0

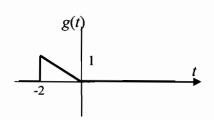
-2 points for not writing

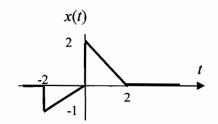
Name: KEY

1. Find the energy and power in the following signal:  $x(t) = 3\cos(1.22 t + 90^{\circ})$ (2 points)

Power= 
$$\frac{(3)^{2}}{2} = 4.5$$

**2.** Given g(t) as shown in the figure, express x(t) in terms of g(t)(2 points)





Energy= 🖎

$$x(t) = -g(t) + 2g(t-2)$$

3. Evaluate the following integral  $\int_{0}^{\infty} e^{(x-3)} \cos \left(\frac{\pi}{2}(x-5)\right) \delta(x-3) dx$ (1 point)

$$= e^{3-3} \left[ \cos \frac{\pi}{2} (-2) \right] = 1 \left[ -1 \right] = -1$$

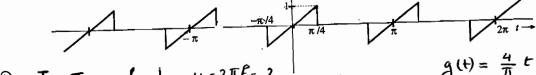
4. Mention two reasons for modulation?

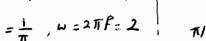
(2 points)

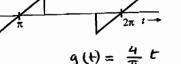
To control (reduce) the antenna size.

To send multiple signals on the same channel.

5. For the shown signal, Mr. Emad wants to find the trigonometric Fourier Series Expansion. Please help him by finding  $a_n$ ? "Simplify but do not Evaluate the integral" (3 points)







①  $T = \pi$   $f = \frac{1}{\pi}, \quad \omega = 2\pi f = 2$   $A_{14}$   $g(t) = \frac{4}{\pi} t$   $A_{n} = \frac{2}{T} \int_{-\pi_{12}}^{\pi} g(t) \cos(2nt) dt = \frac{2}{\pi} \int_{-\pi_{14}}^{\pi} \frac{4}{\pi} t \cos(2nt) dt$