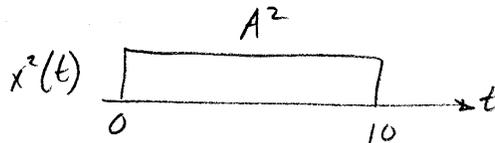
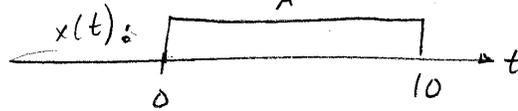


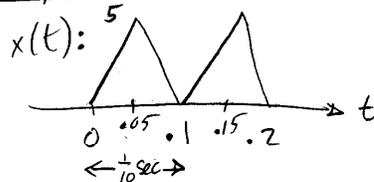
① Text, 2-25b.

$$x(t) = A[u(t) - u(t-10)]$$

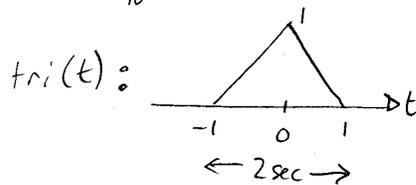


$$E = \int_{-\infty}^{\infty} x^2(t) dt = \int_0^{10} A^2 dt = A^2 \int_0^{10} dt = \boxed{10A^2}$$

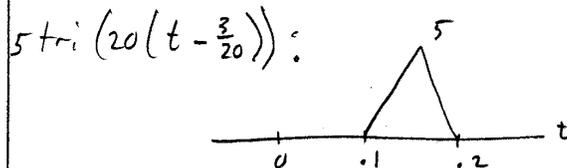
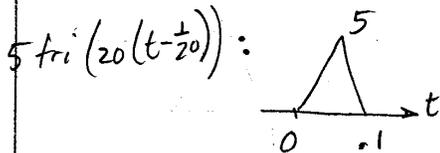
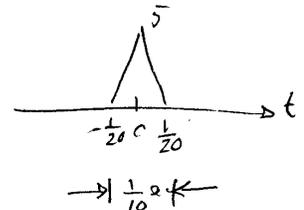
② Text, 2-38



Two triangles, each triangle is the tri function time compressed by a factor of 20



5 tri(20t):



$$x(t) = 5 \text{tri}\left(20\left(t - \frac{1}{20}\right)\right) + 5 \text{tri}\left(20\left(t - \frac{3}{20}\right)\right)$$

③ Text, 2-56b, f

$$(b) g(t) = 20t^3$$

$$g_e(t) = \frac{g(t) + g(-t)}{2} = \frac{20t^3 + 20(-t)^3}{2} = \frac{20t^3 - 20t^3}{2} = \boxed{0}$$

$$g_o(t) = g(t) - g_e(t) = \boxed{20t^3}$$

$$(f) g(t) = 4t \cos 10\pi t$$

$$g_e(t) = \frac{g(t) + g(-t)}{2} = \frac{4t \cos 10\pi t + 4(-t) \cos[10\pi(-t)]}{2}$$
$$= \frac{4t \cos 10\pi t - 4t \cos 10\pi t}{2} = \boxed{0} \quad \text{since: } \cos(\theta) = \cos(-\theta)$$

$$g_o(t) = g(t) - g_e(t) = \boxed{4t \cos 10\pi t}$$

④ Text, 2-59d

$$g(t) = 28 \sin 400\pi t + 12 \cos 500\pi t$$
$$= 28 \cos(2\pi 200t) + 12 \cos(2\pi 250t)$$

$$\uparrow$$
$$f_1 = 200 \text{ Hz}$$

$$T_1 = \frac{1}{200} \text{ s}$$

$$\uparrow$$
$$f_2 = 250$$

$$T_2 = \frac{1}{250} \text{ s}$$

$$T = \text{LCM}(T_1, T_2) = \text{LCM}\left(\frac{1}{200}, \frac{1}{250}\right) = \text{LCM}\left(\frac{1000}{200}, \frac{1000}{250}\right)$$
$$= \frac{\text{LCM}(5, 4)}{1000} = \frac{20}{1000} = \boxed{.02 \text{ s}}$$