

2.20

(a)

Solution.

$$\int_{-\infty}^{\infty} u_0(t) \cos(t) \, dt = \cos 0 = 1.$$

(b)

Solution.

$$\int_0^5 \sin(2\pi t) \delta(t+3) \, dt = 0.$$

(c)

Solution.

$$\int_{-5}^5 u_1(1-\tau) \cos(2\pi\tau) \, d\tau = \int_{-5}^1 \cos(2\pi\tau) \, d\tau = 0.$$

2.21

(a)

Solution.

$$y[n] = \sum_{k=0}^n \alpha^k \beta^{n-k} = \frac{\alpha^{n+1} - \beta^{n+1}}{\alpha - \beta}.$$

2.22

(c)

2.28

(c)

2.29

(g)

2.33

2.39

(b)

2.47

(b)

(d)

(f)