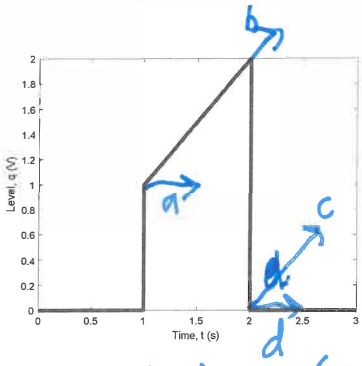
Name Answers

EE3032 – Dr. Durant – Quiz 2
Winter 2019-20, Week 2

1. (3 points) x(t) = cos(2πt) + 1. y(t) = x(-2t).
   a. Sketch y(t). Label your figure so that the period is clear.
   b. Which of the following symmetries does y(t) have? Even, odd, both, neither.
2. (2 points) Sketch z(t) = r(t-1) + u(t-2)
3. (2 points) w(t) = δ(t-1) – δ(2t-6)
   a. Sketch w(t)
   b. Sketch the function that gives the area of w(t) from -∞ to t, $a_w(t) = \int_{-\infty}^{t} w(\tau)d\tau$
4. (3 points) Write an expression for the following function, q(t), using ramps, steps, etc.



④ $q(t) = u(t-1) + r(t-1) - 2u(t-2) - r(t-2)$

a, b, c, d

F = 2Hz

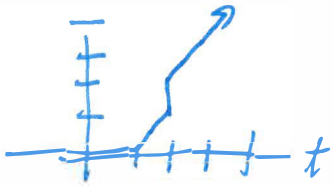
① $y(t) = x(-2t) = \cos(2\pi(-2t)) + 1 = \cos(-4\pi t) + 1 = \cos(4\pi t) + 1$

even

Function is even: $y(-t) = \cos(4\pi(-t)) + 1 = \cos(-4\pi t) + 1$
$= \cos(4\pi t) + 1 = y(t)$

even ⇔ $y(-t) = y(t)$

②



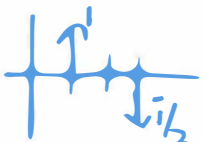
delay of feature @ 0

③ $\delta(2t-6) = \delta(2(t-3)) = \frac{1}{2}\delta(t-3)$

Speed up, reducing area

$1 - \frac{1}{2} = \frac{1}{2}$

ⓐ



(arrow up is ok)

ⓑ

$a_w(t) = u(t-1) - \frac{1}{2}u(t-3)$ ← Extra.