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Q1.

a. Obtain IZT using residue method when

$$X(Z) = \frac{1}{(Z-1)(Z-3)}$$

b. A causal system has difference equation given by

$$y(n) = 0.5y(n-1) - 0.25y(n-2) + x(n)$$

What is ROC of the transfer function of system.

Q2.

a. Obtain DFT of a sequence

$$x(n) = (\tfrac{1}{2}, \tfrac{1}{2}, \tfrac{1}{2}, \tfrac{1}{2}, 0, 0, 0, 0)$$

Using DIFFFT Algorithm.

b. Find the Z-transform and ROC of the following

$$x(n) = \frac{1}{2}\delta(n+1) + 5\left(\frac{1}{2}\right)^{-n} u(-n) + u(-n-1)$$