

This is a BONUS question in addition to this week's assignment. It carries 2 marks.

Q. If $x(n)$ is the unit step function i.e., $x(n) = u(n)$, then prove the following transform in Ω domain.

$$X(\Omega) = \frac{1}{1 - e^{-j\Omega}} + \pi\delta(\Omega)$$

All necessary steps must be shown.