

Q.(3)

Use L' Hopital Rule to find

$$\lim_{w \rightarrow -4} \frac{\sin(\pi w)}{w^2 - 16}$$

It

is

$$\frac{0}{0}$$

form.

as

$$w \rightarrow -4$$

$$\begin{aligned} \lim_{w \rightarrow -4} \frac{\sin(\pi w)}{w^2 - 16} &= \lim_{w \rightarrow -4} \frac{\pi (\cos(\pi w))}{2w} = \frac{\pi (\cos(-4\pi))}{-8} = \frac{-\pi}{8} \\ &= \frac{-\pi}{8} \end{aligned}$$