#1 $$\int_{5}^{\pi/2} e^{i\omega\theta}\,\delta(\theta)\,d\theta = 0$$

Since the interval $[\frac{\pi}{2}, 5]$ does not include the point $\theta = 0$, the only point that can contribute to the integral involving $\delta(\theta)$.

The integral above is, actually, a misprint. The intended problem is to calculate the integral

$$\int_{-5}^{\pi/2} e^{i\omega\theta}\,\delta(\theta)\,d\theta = \int_{-5}^{\pi/2} \underbrace{e^{i\omega\cdot 0}}_{1}\,\delta(\theta)\,d\theta$$

$$= \int_{-5}^{\pi/2} \delta(\theta)\,d\theta = \boxed{1}$$