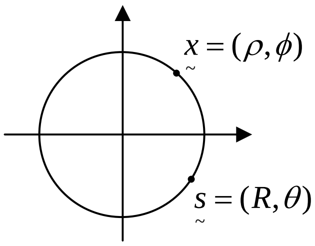
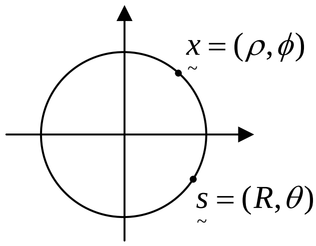
Beprog 108 Pseudo-differential operator

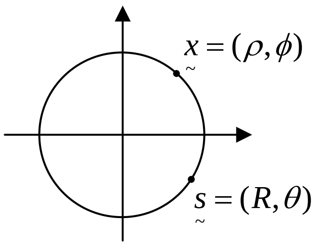
(a) U



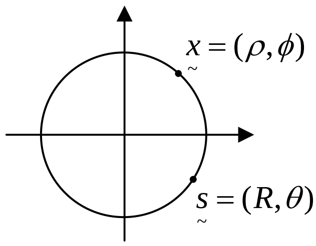
(b) T



(c) L



(c) M



(a) $\int U(R,\theta;\rho,\phi)\begin{cases}\cos m\theta\\ \sin m\theta\end{cases} d\theta = ?$

(b) $\int T(R,\theta;\rho,\phi)\begin{cases}\cos m\theta\\ \sin m\theta\end{cases} d\theta = ?$

(c) $\int L(R,\theta;\rho,\phi)\begin{cases}\cos m\theta\\ \sin m\theta\end{cases} d\theta = ?$

(d) $\int M(R,\theta;\rho,\phi)\begin{cases}\cos m\theta\\ \sin m\theta\end{cases} d\theta = ?$

(e) $\int_0^{2\pi} U(\rho,\phi;\overline{\rho},\overline{\phi})\int_0^{2\pi} U(R,\theta;\rho,\phi)\begin{cases}\cos m\theta\\ \sin m\theta\end{cases} d\theta d\phi = ?$

(f) $\int_0^{2\pi} T(\rho,\phi;\overline{\rho},\overline{\phi})\int_0^{2\pi} T(R,\theta;\rho,\phi)\begin{cases}\cos m\theta\\ \sin m\theta\end{cases} d\theta d\phi = ?$

(g) $\int_0^{2\pi} L(\rho,\phi;\overline{\rho},\overline{\phi})\int_0^{2\pi} L(R,\theta;\rho,\phi)\begin{cases}\cos m\theta\\ \sin m\theta\end{cases} d\theta d\phi = ?$

(h) $\int_0^{2\pi} M(\rho,\phi;\overline{\rho},\overline{\phi})\int_0^{2\pi} M(R,\theta;\rho,\phi)\begin{cases}\cos m\theta\\ \sin m\theta\end{cases} d\theta d\phi = ?$

, where $\rho = \overline{\rho} = R = a$.

【Reference】

[1] D. H. Yu, Natural boundary integral method and its applications, p.113, Science/Kluwer Academic Press, 2002.