

PROBLEM SET # 8
MATH 252

Due October 28.

1. Classify all irreducible (continuous) representations of O_2 (the group of orthogonal 2×2 -matrices).
2. Check that the Hermitian products (1.2) and (1.4) defined in lecture notes 8 are invariant.
3. Show that the operator $T: \mathcal{P}_s^+ \rightarrow \mathcal{P}_{-s}^+$ defined by the formula

$$T\left(\phi(x) dx^{\frac{1+s}{2}}\right) = \left(\int_{-\infty}^{\infty} \phi(x) |x-y|^{s-1} dx\right) dy^{\frac{1-s}{2}}$$

is intertwining. Therefore \mathcal{P}_s^+ is isomorphic to \mathcal{P}_{-s}^+ .