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We may set $g = D_1^* Kf$. Using the same notation as in the preceding theorem we have

$$(f, D_2^* D_2 Kf)_2 = \lim_{R \to \infty} (f, D_2^* D_2 Kf)_{D(R), 2}$$

$$= \lim_{R \to \infty} \left((D_2 f, D_2 Kf)_{D(R), 3} + (f, \sigma(D_2^*, d|x|) D_2 Kf)_{S(R), 2} \right)$$

$$= \lim_{R \to \infty} (f, \sigma(D_2^*, d|x|) D_2 Kf)_{S(R), 2} \quad (\text{since } D_2 f = 0).$$

The same argument as in Theorem 6 proves that the limit is zero. This proves the theorem.

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