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Correction to: Algebraic Construction of Near-Bent and APN Functions

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Remark 4.1 and Remark 4.5 in Section 4 will be true only if a is a power of two. Hence, the proofs of Theorem 4.2 and Theorem 4.6 hold in the case of a being a power of 2.

More generally, both Theorems 4.2 and 4.6 are true by observing the change of variable $x \to y + 1$ in the Walsh-Hadamard Transform, as it is a permutation on the finite field, i.e., we get exactly opposite values of the function $f(x) = \mathrm{Tr}(x)^d$, where d is the Niho exponent. Since the function $f(x) = \mathrm{Tr}(x)^d$ is near-bent function, the function $f(x) = \mathrm{Tr}(x+1)^d$ is also a near bent function.

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