A derivation on an algebra which is not inner.

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Suppose that A is an algebra with unit 1 and a is an element of A which is not algebraic (i.e. $\{1, a, a^2, \cdots\}$ isn't a linearly independent set). Let B be the subalgebra of A generated by 1 and a. Define a mapping D of B into B by $D(\lambda_0 + \lambda_1 a + \cdots + \lambda_n a^n) = \lambda_1 + 2\lambda_2 a + \cdots + n\lambda_n a^{n-1}$. Obviously D is a derivation on B and isn't inner, since B is commutative and $D \neq 0$.