EXERCISE 4 IN D-MODULES I

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(1) Let $A,B$ be rings. Let $F : \mathcal{M}(A) \to \mathcal{M}(B)$ be a strongly right-exact functor. Then $F(A)$ has a natural structure of a $B-A$-bimodule and $F$ is isomorphic to the functor $M \mapsto F(A) \otimes_A M$.

(2) (P) Let $M \in \mathcal{M}(\mathcal{D}_V)$ and let $\mathcal{F}(M) \in \mathcal{M}(\mathcal{D}_{V^*})$ denote the module obtained from $M$ by swapping the actions of $x_i$ and $\partial_i$. Let $T : V \to W$ be a linear map, and let $T^* : W^* \to V^*$ denote the dual map. Then $\mathcal{F}(T_0 M) = (T^*)^0(\mathcal{F}(M))$.

(3) For an isomorphism $\nu$, $\nu_0 = (\nu^{-1})^0$.

URL: http://www.wisdom.weizmann.ac.il/~dimagur/Dmod1_3.html

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