

**W Problems.**

- Do some parts of 10-7 and 10-9, as needed to become comfortable with such computations.
- The categorically inclined may want to read 10-3, 11-3, and/or 11-18.

**HI Problems.**

- 9-17(a) and modified (c): For part (c), let  $k = 2$ , and consider only  $V_1$  and  $V_2$  in a neighborhood of  $(1,2,3)$  instead of  $(1,0,0)$ . *Not required, but interesting to ponder: repeat considering only  $V_2$  and  $V_3$ , and again considering only  $V_1$  and  $V_3$ .*
- 9-19.
- 10-1.
- 10-15 & 10-16. *(Remark, not part of the problem: Tautological vector bundles are useful to algebraic geometers and algebraic topologists.)*
- 11-1(a) and modified (b): Let  $V$  be a vector space of nonzero dimension. Prove that there cannot be an isomorphism  $\beta_V$  for which the diagram in the problem commutes for every linear map  $A : V \rightarrow W$  (even if we allow  $\beta_W$  depend on  $A$  as well as  $W$ ).