(1) (P) $M \otimes_A \text{Hom}(M, A) \cong A \iff M$ is locally isomorphic to $A$.
(2) (P) $\nu^0$ is left adjoint to $\nu_0$ and $\nu^*$ is left adjoint to $\nu_*$.
(3) (P)
   (a) If $X$ is affine then any invertible sheaf is very ample
   (b) $\alpha_i$ is very ample on $X_i \Rightarrow \pi_1 \alpha_1 \otimes \pi_2 \alpha_2$ is very ample in $X_1 \times X_2$
   (c) If $\mathcal{L}$ is any inv. sheaf on a projective variety $X$, then $\mathcal{L}(m)$ is very ample for $m \gg 0$
(4) (P)
   (a) $\mathcal{O}(m)$ on $\mathbb{P}^n$ is very ample. Thus it defines $\mathbb{P}^n \to \mathbb{P}^N$. Find this map.
   (b) $\mathbb{P}^n, \mathcal{O}(1)$ and $\mathbb{P}^k, \mathcal{O}(1)$ define a very ample sheaf $\mathcal{O}(1) \otimes \mathcal{O}(1)$ on $\mathbb{P}^n \times \mathbb{P}^k$. It defines $\mathbb{P}^n \times \mathbb{P}^k \to \mathbb{P}^{nk+n+k}$. Find this map.

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

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