$\Rightarrow [\omega] \in H^2(M.\mathbb{Z})$. In other words, $\int_\sigma \omega = \#(V\cdot\sigma)$ is an integer, where σ is a 2-cycle in M. ⌟⌟

A metric whose (1,1)-form is rational is called a Hodge metric.

Corollary. If M, M' are algebraic varieties, then $M\times M'$ is.

pf) If ω, ω' are closed, integral, positive (1,1)-form on M, M', respectively, and $\pi: M\times M' \longrightarrow M$, $\pi': M\times M' \to M'$ are the projection maps, then $\pi^*\omega + \pi'^*\omega'$ is again closed, integral, and positive of type (1,1). Q.E.D.

⌈ $d(\pi^*\omega + \pi'^*\omega') = \pi^* d\omega + \pi'^* d\omega' = 0 \Rightarrow \pi^*\omega + \pi'^*\omega'$ is closed. $(\pi^*\omega + \pi'^*\omega')(v+v', \bar{v}+\bar{v}') = \pi^*\omega(v+v', \overline{v+v'}) + \pi'^*\omega'(v+v', \bar{v}+\bar{v}') = \omega(v,\bar{v}) + \omega'(v', v') \geq 0$
The equality holds only if $v = v+v' = 0 \Leftrightarrow v = 0 = v'$.

Given $f: M \longrightarrow N$ and $\omega \in H^2(N.Z)$, then $f^*\omega$ is in $H^2(M.\mathbb{Z})$ since $f^*\omega(\sigma) = \omega(f_*\sigma)$ is an integer ($\because$ ω is integral & $f_*\sigma$ is a cycle)
$\Rightarrow$ By the previous theorem, $M\times M'$ is algebraic. ⌟⌟

A classical example of this is the Segré map $\mathbb{P}^n \times \mathbb{P}^m \to \mathbb{P}^N$ given by the complete linear system of the line bundle $\pi_1^* H \otimes \pi_2^* H$ on $\mathbb{P}^n \times \mathbb{P}^m$. For example, the Segré map $\mathbb{P}^1 \times \mathbb{P}^1 \longrightarrow \mathbb{P}^3$ is given, in terms of homogeneous coordinates $[z_0, z_1]$ and $[w_0, w_1]$ on $\mathbb{P}^1$, by
$([z_0, z_1], [w_0, w_1]) \longrightarrow [z_0w_0, z_0w_1, z_1w_0, z_1w_1]$.