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But the canonical bundle of S is negative, a contradiction.

⌈ Since $K_S = -H|_S$, $K_S \cdot \tilde{L} = -\int_{\tilde{L}} \frac{\sqrt{-1}}{2\pi} \Theta < 0$ $\left(\because \frac{\sqrt{-1}}{2\pi}\Theta\right.$ is a volume form). ⌟

Similarly, suppose that the six points p_i lay on a conic curve $C \subset \mathbb{P}^2$. By the above C would have to be smooth, and so its proper transform $\tilde{C}$ in S would again be a smooth rational curve with self-intersection $2 \cdot 2 - 6 = -2$; the same argument shows this can not happen.

⌈ First, note that C is irreducible, for if C is reducible, then $C = L_1 + L_2$, and one of L_1 & L_2 must contain 3 p_i's. This is impossible by the above.

Suppose that $p \in C$ is a singular point.

Consider the conic $C' = L_{pp_1} + L_{p_2p_3}$, where we assume that $p \neq p_1, p_2, p_3$.

$4 = C \cdot C' = C \cdot L_{pp_1} + C \cdot L_{p_2p_3} > 4$ since $\#(C \cap L_{pp_1}) \geq 2$. $\Rightarrow$ C must be smooth.

Again as the line case above, $\tilde{C} = C$ since the exceptional divisors are points. $\Rightarrow$ $g(C) = g(\tilde{C})$

$= \left.\frac{(d-1)(d-2)}{2}\right|_{d=2} = 0$, since C is a conic, by the genus formula on P 221,

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