$C, \mathcal{O}(2H)) = H^0(C, \mathcal{O}(G))$,
$\Rightarrow K_C = -2H + 2H|_C = 0|_C \Rightarrow K_C$ is a trivial bundle over C. $\Rightarrow$ By the Gauss-Bonnet theorem, $\chi(C) = 0 \Rightarrow$ In case C is connected, then C is a torus, and the genus of C is 1.

③ By Bezout' theorem on P172, since F meets G transversely,

$$4 = \sum_i \text{mult}_{Z_i}(F \cdot G) \cdot \text{degree}(Z_i).$$

where $\text{mult}_{Z_i}(F \cdot G) = 1$ for all i.

$\Rightarrow$ (i) $4 = 1+1+1+1 \Rightarrow$ impossible since $F \cap G$ does not contain a line. (see ① & $\deg Z_1 = 1 \Rightarrow Z_1 = \mathbb{P}^1$, see P174).

(ii) $4 = 2+1+1 \Rightarrow$ impossible by the same reason above

(iii) $4 = 2+2$.

$\Rightarrow F \cap G = C_1 \cup C_2$.

$\deg C_1 = 2 \Rightarrow C_1 \subset \mathbb{P}^3 \Rightarrow$ By the result on P253, C_1 is degenerate. $\Rightarrow C_1 \subset H_1 = \mathbb{P}^2$.

$\Rightarrow$ Since G & F are irreducible, $F \cap H_1 = C_1 = G \cap H_1$.

Similarly, $C_2 \subset H_2 = \mathbb{P}^2$, and $F \cap H_2 = C_2 = G \cap H_2$.

ⓐ Case $H_1 = H_2 = H$.

$\Rightarrow F \cap H = C_1 \cup C_2$

$\Rightarrow$ By Bezout's theorem, since $\deg F = 2$ & $\deg H = 1$,

$2 = \deg C_1 + \deg C_2 = 4$, which is absurd.