Wrong 2

1.

(a) $\{(x,y) \mid x \text{ and } y \text{ are odd}\}$

(b) $\{(x,y) \mid x \text{ and } y \text{ are odd}\}$

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(c) $\{(x,y) \mid x \text{ and } y \text{ are odd}\}$

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Yes. Reflexivity: $x \sim x$ because $x \cdot x$ is a perfect square. Symmetric: $x \sim y$ $\Rightarrow$ $x \cdot y$ is a perfect square $\Rightarrow$ $y \cdot x$ is a perfect square $\Rightarrow$ $y \sim x$.

2.

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Transitive: $x \sim y$ $\Rightarrow$ $x \cdot y$ is a perfect square $\Rightarrow$ $x \cdot y = z^2$ for some $z \in \mathbb{Z}$. $y \sim z$ $\Rightarrow$ $y \cdot z$ is a perfect square $\Rightarrow$ $y \cdot z = w^2$ for some $w \in \mathbb{Z}$. $x \cdot y \cdot z = z^2 \cdot y = z^2 \cdot w^2 = (z \cdot w)^2$. $x \cdot y \cdot z$ is a perfect square $\Rightarrow$ $x \sim z$.

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10.

Not all Cartesian Product Binary Lines Bijections for 3 binary equations 10 marks

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