Latex help: "a divides b" and "a does not divides b" and "a is congruent to b mod n" and "a is not congruent to b mod n":

$$a \mid b \quad , \quad a \nmid b \quad , \quad a \equiv b \pmod{n} \quad , \quad a \not\equiv b \pmod{n}.$$

Do not forget needed parentheses: $a \mid (b-17)$ is correct while $a \mid b-17$ is not right.

►. Theorem 1. For each integer a, if there exists an integer n such that a divides $9n+5$ and a divides $6n+1$, then a divides 7.

1. Symbolically write Theorem 1, which is challenging so a hint: your solution should take the form

$$(\forall a \in \mathbb{Z}) \left[\left\{ (\exists n \in \mathbb{Z}) \left[\, a \mid (9n+5) \ \wedge \ a \mid (6n+1) \, \right] \right\} \implies ???????????????? \right].$$

2. Prove Theorem 1. Hint. The hypothesis will give a system of equations involving n but the conclusion does not contain an n. So how can you (algebrically) eliminate the n's in the system of equations from hypothesis?

. . . . . .

DELETE this whole sentence and THEN put your answer to ALL parts down here.