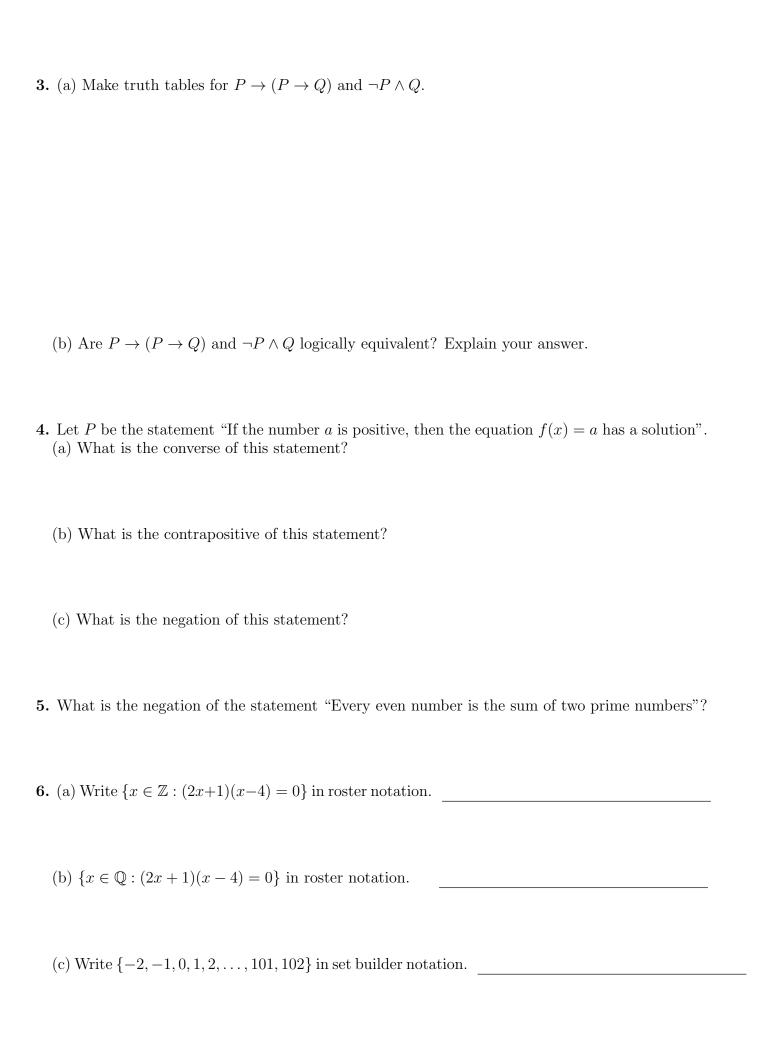
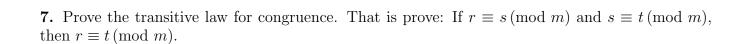
Math	ema	tics	300	Quiz	10
Show	your	work	to g	et crec	lit.

Name:\_\_\_\_

The problems are worth 10 points each.

- 1. Define the following:
  - (a) The integer n is even.
  - (b) The integer n is odd.
  - (c) The integer a divides the integer b (in symbols  $a \mid b$ ).
  - (d) For integers a, b, n the a is **congruent to** b **modulo** n. (in symbols  $a \equiv b \pmod{n}$ .)
- **2.** Prove or give a counterexample: If n is even, then  $(n^3 + 11) \equiv 3 \pmod{8}$ .





**8.** Prove: If  $a \equiv b \pmod{n}$  and  $x \equiv y \pmod{n}$ , then  $a - x \equiv b - y \pmod{n}$ .

9.	Prove or	give a	counterexample:	If $x \equiv y$	$\pmod{n}$ ,	then $x^2 \equiv$	$u^2$	$\pmod{n}$	).

10. Find all Pythagorean triples of the form m, m+3, m+6. The triples are: \_\_\_\_\_\_