

Instructions

- Answer each question completely; justify your answers.
 - This assignment is due at: 5:00 pm on Tuesday March 30th.
1. Use a STS(9) to construct a STS(19).
 2. Construct a STS(19) using Skolem's construction method.
 3. Find a Skolem triple system of order m for (a) $m = 12$ (b) $m = 13$. What order Steiner triple systems could be constructed from these?
 4. Find an O'Keefe triple system of order m for (a) $m = 14$ (b) $m = 15$. What order Steiner triple systems could be constructed from these?
 5. Prove that an O'Keefe triple system of order m can exist only if $m \equiv 2$ or $3 \pmod{4}$.