Solutions

MTH 355 Quiz 4

No notes nor calculators are allowed. FRONT AND BACK

1. A five digit house number contains no zeros. The house number has exactly four distinct digits. How many such house numbers are there?

   \[ 1 \cdot (5) \cdot 8 \cdot 7 \cdot 6 = 30240 \]

   \( \text{Choose and place the other three digits.} \)

   \( \text{Placement of the repeat} \)

   \( \text{Repeat} \)

2. Five friends play poker, each starting with 20 dollars. All bets are in multiples of 1 dollar. How many ways are possible for the redistribution of the 100 dollars after the night of poker?

   \[ \binom{100 + 4}{100} \quad \text{or} \quad \binom{100 + 4}{4} \]
3. Give a proof or counterexample for the following statement:

\[ R \text{ is not symmetric } \Rightarrow R \text{ is antisymmetric.} \]

\textbf{Counterexample}

\[ A = \{ a, b, c \} \]

\[ R = \{ (a,b), (b,a), (a,c) \} \]

is neither symmetric nor antisymmetric.