Homework 10

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Exercise 2. Find the decimal expansion of the binary number (111...111) (with n 1's).

max we can store with n in base b.

$$\Rightarrow \quad 2^n - 1 \qquad \left(\text{e.g. } 10^2 - 1 = 99\right)$$

$$\left(b^k - 1\right)$$

Exercise 9. How many distinct five-card poker hands contain:

1. *One pair* (poker hand containing two cards of the same kind and three cards of three other kinds).

2. *Two pairs* (poker hand containing two cards of the same kind, two cards of another kind and one card of a third kind).

3. *Three of a kind* (poker hand containing three cards of the same kind and two cards of two other kinds).

① $\binom{13}{1} \cdot \binom{4}{2} \cdot \binom{12}{3} \cdot \binom{4}{1}^3$

② $\binom{13}{2} \cdot \binom{4}{2}^2 \cdot \binom{11}{1} \cdot \binom{4}{1}$

③ $\binom{13}{1} \cdot \binom{4}{3} \cdot \binom{12}{2} \cdot \binom{4}{1}^2$