

Towers

1.

Move Disc 1 to the third tower and Disc 2 to the second tower. Then move Disc 1 on top of Disc 2, and move Disc 3 to the third tower. Move Disc 1 back to the first tower and then Disc 2 on top of Disc 3. Finally, move Disc 1 to the third tower to solve the problem. There is a total of 7 moves.

2.

31 moves

3.

1024 moves

4.

$2^n - 1$

5.

The formula to find the moves is much more simple, but the amount of moves used to find the answer goes up far more exponentially than the matrix algorithm. Solving Tower of Hanoi by hand (without the formula) would take longer than a matrix of the same 'size' (ex. amount of discs is 3 versus a 3x3 matrix), if you can compare those.